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Evidence -- Expert Testimony: Admissibility of Human Factors Testimony Under the Federal Rules of Evidence

Robert Lyman Dewey

NOTES

Evidence—Expert Testimony: Admissibility of Human Factors Testimony Under the Federal Rules of Evidence

In recent years courts have liberalized the standards for admission of expert testimony. Federal Rules of Evidence 702 through 705 reflect this trend and are now in effect in many states as well as in the federal court system.[1] To be admissible under the rules, expert testimony need only assist the trier of fact.[2] Furthermore, a qualified expert is allowed to give opinions on ultimate issues,[3] which were previously reserved for determination by the trier of fact. Certain ultimate issues, including conclusions concerning whether a particular legal standard is satisfied, are still inappropriate for expert testimony, however, because simply telling the jury the result to reach does not constitute assistance. Moreover, when the mode of analysis applied by an expert lacks scientific reliability, there is a further danger that the expert's testimony will not assist but, instead, mislead. Human-factors analysis testimony demonstrates both of these dangers.

According to a practitioner in the field, human-factors analysis is the "study of all the factors which combine to influence the decision of the individual, such as past experience, present feelings, and immediate motor response in terms of the present situation or environment."[4] In a line of recent Florida cases involving railroad crossing accidents,[5] several psychologists and engineers have qualified as human factors experts and have been permitted to give their opinions on the probable behavior of the average or reasonable person in the actual accident settings. Assuming human-factors testimony satisfies the threshold test of assistance to the jury, the Florida courts nevertheless have failed to consider qualifications of the proferred experts adequately, neglected to determine whether human-factors analysis is scientifically reliable and overlooked the problem that expert testimony on the behavior of a reasonable person is not permitted even under the present ultimate issue rule.[6]

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1. The Federal Rules of Evidence took effect in United States courts on July 1, 1975. Pub. L. No. 93-595, § 1, 88 Stat. 1926 (1975). Twenty-one states have adopted these rules with omissions and variations. Fed. R. Evid. Serv. (state correlation tables) (1981).

2. Fed. R. Evid. 702.

3. Id. 704.

4. Public Health Foundation v. Cole, 352 So. 2d 877, 879 (Fla. 4th Dist. Ct. App. 1977), cert. denied, 361 So. 2d 834 (Fla. 1978). The witness provided this explanation of human engineering, his subspecialty. Another human-factors specialist has defined his field as the study of how a human uses and interacts with his products. Fowler, Human Factors Analysis, 10 Trial, Nov.-Dec. 1974, at 53. "Products" presumably refers to items such as consumer goods found in the home and more complicated devices like automobiles.

5. See text accompanying notes 7-41 infra.

6. The Florida legislature substantially adopted the Federal Rules of Evidence in 1976. Law of June 23, 1976, ch. 76-237, 1976 Fla. Laws 556. The Florida Evidence Code appears in chapter 90 of the State statutes. Fla. Stat. Ann. (West 1979). The Florida evidence rules substantially follow the federal rules but contain numerous variations, omissions and additions. 13

The line of Florida decisions in which human factors testimony was offered began in 1971 with *Seaboard Coast Line Railroad v. Hill*.[7] In that case decedent's automobile automobile crashed into the side of a train on an extremely dark, foggy night. Neither a flagman nor flares had been posted at the crossing. Plaintiff alleged negligent operation of the train; defendant denied this charge and counterclaimed contributory negligence.[8] At trial a human-factors psychologist who had never seen the crossing or the decedent[9] testified that an average driver would not have been able to gather adequate information to react properly to the obstruction on the tracks. In reaching this conclusion, the expert contended that the darkness, fog, absence of flares and absence of sound would create perceptual problems for a driver.[10]

The Fourth District Court of Appeal held that the judge did not abuse his discretion in concluding that the expert was qualified.[11] To decide whether the subject matter was appropriate for expert testimony, the court examined the expert's explanation of the causes of the perceptual difficulties. The court concluded that "the subject matter of the opinion was not just the visibility of the train on the crossing, but also the deceptive quality of various factors that were present in the environment . . . , and the manner in which a person would react to these factors."[12] Such reactions could be found to lie beyond the scope of the jurors' common knowledge and within the expert's sphere of expertise. Finally, the court held that even if the decision to admit the expert testimony was erroneous, there was sufficient independent evidence supporting the jury's conclusion that the defendant was negligent to render the error harmless.[13]

Four years later a different panel of the same court ruled that a human-factors expert's opinion about the behavior of an average man in given circumstances was improperly admitted. In *Seaboard Coast Line Railroad v. Kubalski*[14] decedent's truck was stopped, during the day, on railroad tracks, despite the presence of numerous warning devices.[15] The court distinguished

U.L.A. 213 (1980). Differences involving expert testimony, however, are minor. The Florida Evidence Code did not take effect until July 1, 1979. Law of June 21, 1978, ch. 78-379, § 1, 1978 Fla. Laws 1052. Therefore, none of the human-factors decisions applied the federal rules in determining the admissibility of and limits on testimony in this area.

7. 250 So. 2d 311 (Fla. 4th Dist. Ct. App. 1971) (2-1 decision), writ discharged, 270 So. 2d 359 (Fla. 1972).

8. Id. at 313-15. In each of the Florida cases examined in this Note, plaintiffs employed human-factors witnesses to demonstrate that there was no contributory negligence.

9. Id. at 314.

10. Id. at 315. Contra, St. Louis Southwestern Ry. v. Jackson, 242 Ark. 858, 416 S.W.2d 273 (1967) (factors such as position of the sun, elements distracting to motorists, weather and obstructions to vision are individually within the comprehension of the average juror); Owre v. Crown Zellerbach Corp., 260 Or. 454, 490 P.2d 504 (1971) (expert testimony not permitted because the distracting influences were hazards to good vision encountered regularly by motorists).

11. 250 So. 2d at 314. This decision to qualify the witness as an expert is criticized in text accompanying notes 54-58 infra.

12. Id. at 315.

13. Id.

14. 323 So.2d 32 (Fla. 4th Dist. Ct. App. 1975).

15. Id. at 33.

Hill by contending that the environmental conditions in that case amounted to "extraordinary circumstances." Noting the absence of unusual circumstances, the *Kubalski* court held that "inroads upon the province of the jury to decide what the reasonable man should do" were unwarranted.[16] Because the testimony by the human-factors expert, a president of a safety consulting firm, may have significantly affected the jury's allocation of negligence, the court further determined that the admission of this testimony was not harmless error.[17]

In the only case not involving a railroad crossing accident, the trial court in *Public Health Foundation v. Cole*[18] upheld the admissibility of human-factors testimony. Plaintiff was injured on the Fourth of July while diving into a river on defendant's property. The accident occurred late in the afternoon as the tide was receding; no warnings were posted about the presence of dangerous diving conditions at low tide.[19] Plaintiff testified, however, that she had intimate knowledge of the location of the accident and of most of the environmental factors affecting the area. Furthermore, she had observed that the tide was going out swiftly that afternoon, to the extent that she could "see shallow places and deep places."[20]

When asked a hypothetical question posed in this factual context, Dr. Isadore Scherer, the same expert witness who testified in *Hill*, concluded that a reasonably prudent individual could have this accident because of the nature of the situation and the other described factors.[21] In addition to the factors already mentioned, Dr. Scherer took into account three other conditions. By analyzing a survey map of the area, Scherer noted that plaintiff may have been bothered by glare from the sun, making it more difficult to judge the depth of the water. Murky water would also interfere with determining depth. Finally, Dr. Scherer thought that the occurrence of the accident on the Fourth of July was a significant variable. Because it was a holiday, plaintiff was happy and enjoying herself; therefore, she may have dived into the river faster than she ordinarily would.[22] In drawing these conclusions, Dr. Scherer utilized the

16. Id. at 34. The court contrasted "extraordinary circumstances" with ordinary ones to explain the admission of expert testimony in *Hill*. Ordinary circumstances would be found to be within the competence of the jury; therefore, expert testimony on such conditions would be barred.

17. Id. Decedent had been found 60% negligent, and the railroad 40% negligent. Were it not for the prejudicial testimony, decedent's negligence might have been found to be even greater.

18. 352 So. 2d 877 (Fla. 4th Dist. Ct. App. 1977) (2-1 decision) (none of the judges had been on either the *Hill* or *Kubalski* panel) cert. denied, 361 So. 2d 834 (Fla. 1978).

19. Id. at 879.

20. Id. at 880. When asked why the accident happened, plaintiff replied, "I don't know. I guess I just didn't pay enough attention to the depth of the water." Id.

21. Id. at 880-81.

22. Id. at 881. With respect to plaintiff's intimate knowledge of the area, the expert noted that habit inference would have downgraded her alertness to the situation, concluding that this was another reason that a reasonably prudent person could have had the same accident. Id. On the other hand, some courts have reasoned that familiarity with the scene of the accident makes it more likely that the party is negligent. See, e.g., Owre v. Crown Zellerbach Corp., 260 Or. 454, 490 P.2d 504 (1971) (testimony by consulting engineer regarding the difficulty of seeing traffic light excluded since decedent knew of the light).

deposition testimony of plaintiff and eyewitnesses, as well as photographs of the scene of the accident and the survey map of the area.[23]

The Fourth District Court of Appeal affirmed the trial court's decision to admit Dr. Scherer's testimony, reasoning that the opinion testimony was related to the deceptive quality of factors present in the environment.[24] This is the same justification that the *Hill* court propounded.[25] Since the environmental conditions created a situation that may have been beyond the ordinary experience and understanding of the jury, the *Cole* court determined that expert testimony was appropriate.[26]

Although the *Cole* decision gives further support to admission of human-factors testimony, the panel there came very close to setting aside the *Hill* precedent. The concurring judge considered the decision in *Hill* an "unhappy one" but reluctantly followed it because it was a precedent of his own court.[27] Believing that opinions on whether a party's conduct was negligent completely usurp the jury's function, the judge did not think that the harmless error rule could justify the decision. Because Dr. Scherer had concluded that a reasonable person could have had this accident, the judge reasoned that the jury may have been persuaded to ignore other evidence in finding Mrs. Cole totally free of negligence.[28]

Finally, the most recent Florida case that considered the admissibility of human-factors testimony, *Seaboard Coast Line Railroad v. Buchman*,[29] involved a complicated intersection of railroad tracks and highways, and the questionable audibility of the train whistle. Even though the train's headlamps were on and its bell had been ringing continuously, decedent had never slowed while approaching the crossing.[30] The trial judge admitted testimony given by two human-factors experts. The first expert, Frank Fowler, testified that a number of "confusion factors" were present at the crossing. These included the multiple intersections of highways and crossings, the slight incline of the railroad crossing and the restricted view of the tracks because of an orange grove.[31] The second expert, Norman Korobow, stated that eighty to eighty-seven percent of the population would not have been able to hear the whistle, a conclusion he based on the facts in evidence, including the velocity of the wind on the day of the accident.[32]

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23. 352 So. 2d at 881.

24. Id. at 879.

25. 250 So. 2d at 315. See text accompanying notes 11-13 supra.

26. 352 So. 2d at 879. Physical conditions that the court mentioned included the angle of the sun, glare, the tide and overall weather conditions.

27. Id. at 882.

28. Id.

29. 358 So. 2d 836 (Fla. 2d Dist. Ct. App. 1978), reversed, 381 So. 2d 229 (Fla. 1980).

30. Id. at 837.

31. Id. at 840.

32. Id. Also, at the time of the accident, decedent had the car radio turned on and the windows rolled up. Id. at 837.

A third expert, not a human-factors expert, testified about the absence of proper warning devices at the crossing. Id. at 840-41. Similar testimony was excluded in *Hill* because it was found to be within the comprehension of the jury. 250 So. 2d at 314.

The Second District Court of Appeal reversed the lower court's determination of admissibility. Because it was particularly concerned with the prejudicial effect that improper expert testimony could have on the jury in this case because there was no independent evidence of negligence on the part of the railroad, the court held that the confusion factors were within the jury's experience.[33] While mention of these factors would have been appropriate in the closing argument of counsel, allowing Fowler to make these observations, in the court's view, unduly influenced the jury and invaded its province.[34] The *Buchman* court rejected Korobow's testimony for a different reason. Because of the absence of extraordinary circumstances, testimony concerning the ability of the general populace to hear the whistle was unwarranted.[35]

The Florida Supreme Court reversed the court of appeal's decision in *Buchman* in its first consideration[36] of the admissibility of human-factors testimony. The court[37] relied upon the *Hill* "deceptive quality of the environment" test and referred to the *Kubalski* unusual circumstances distinction, in finding conditions sufficiently analogous to warrant expert testimony.[38] Rather than invading the province of the jury, the expert testimony would assist the jury in its deliberations.[39] The dissent maintained, however, that no unusual circumstances existed; hence, the jury should have been free to draw its own conclusions.[40]

Prior to the adoption of the Federal Rules of Evidence, Florida's test of admissibility of expert testimony was whether the facts to be determined were obscure and not within the ordinary experience of the jury. Florida courts restricted admission to situations in which special knowledge or experience was necessary to draw a valid conclusion.[41] For this reason, courts considering the admissibility of human-factors testimony felt constrained to support their decisions by showing that the particular facts evidenced "extraordinary

33. 358 So. 2d at 841-42.

34. Id. at 842. For explanation of the use of the phrase "invades the province of the jury," see C. McCormick, Handbook of the Law of Evidence § 12 (2d ed. 1972 & Supp. 1978).

35. 358 So. 2d at 842. The court questioned the reliability of Korobow's opinion, since his testimony did not imply that the responsibility of motorists to be alert for trains was a factor given consideration in his analysis. Id. at 840.

36. Trial courts allowed human-factors testimony in two cases that preceded *Buchman* to the supreme court. Seaboard Coast Line R.R. v. Welfare, 350 So. 2d 476 (Fla. 1st Dist. Ct. App. 1977), quashed, 373 So. 2d 886 (Fla. 1979); Seaboard Coast Line R.R. v. Helman, 330 So. 2d 761 (Fla. 4th Dist. Ct. App. 1976), quashed, 349 So.2d 1187 (Fla. 1977). Neither the appellate nor the supreme court opinion in *Helman* analyzes admissibility of the testimony. In *Welfare*, however, the Florida Supreme Court considered the human-factors evidence as proper—in dicta—over the dissent of Justice Alderman.

37. Buchman v. Seaboard Coast Line R.R., 381 So. 2d 229 (Fla. 1980).

38. Id. at 230.

39. Id.

40. Id. at 231 (Alderman, J., dissenting). One of the two dissenting justices was, ironically, Justice Alderman, who had written the *Cole* opinion while serving on the appellate court. His dissent emphasized that the jury was fully competent to appreciate the conditions existing at the time of the accident.

41. Mills v. Redwing Carriers, Inc., 127 So. 2d 453 (Fla. 2d Dist. Ct. App. 1961). The court noted that if expert testimony were permitted in instances when the jury was competent, there was a potential danger that the jury might be unduly influenced by the opinion of the expert. Id. at 456.

circumstances" or a "deceptive quality of the environment." Either characteristic would remove the subject matter from the ordinary experience of the jury. The major difficulty, however, lies in determining what circumstances are extraordinary. The *Hill* court noted such factors as darkness, fog, and absence of flares in deciding that human-factors testimony was admissible. Arguably, each of these conditions is well within the common knowledge of jurors.[42]

Federal Rule of Evidence 702 considerably simplifies this problem. As long as the testimony will assist the jury, it is admissible.[43] Under rule 702 expert testimony pertaining to a particular subject should be permitted whenever it will assist the trier of fact in understanding the evidence or determining a fact in issue.[44] This is a more liberal standard than the traditional common law requirement that the subject of the testimony must be beyond the comprehension of the average layman.[45] Thus, under the statutory standard, even though a layman has a fundamental grasp of a particular issue or subject, a court may still permit expert testimony if it would provide additional aid to the jury.[46] When the trier of fact is as competent as the expert to evaluate an issue, however, the use of expert testimony should be precluded.[47]

The Florida Supreme Court advanced this assistance rationale when supporting the trial judge's admission of expert testimony in *Buchman*,[48] even though the assistance test was not in effect at the time of the trial.[49] As will be seen below, it is doubtful that human-factors opinions genuinely help the jury make a more informed decision than it could make on its own.[50]

Even if expert testimony would be helpful to interpret certain information, the judge must still decide whether the prospective witness possesses the

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42. See note 10 and accompanying text supra. Of course, one reason that human-factors testimony may still be appropriate despite the jury's ability to comprehend the individual factors is that multiple factors may combine to create an environment with which the jury is unfamiliar.

43. Fed. R. Evid. 702, Adv. Comm. Note.

44. Id. See, e.g., United States v. Masson, 582 F.2d 961 (5th Cir. 1978) (testimony of qualified expert regarding gambling operations necessary to aid jury in understanding taped conversations in the jargon of this business).

45. See C. McCormick, supra note 34, § 13. Although North Carolina has yet to adopt the federal rules, decisions of the state courts generally apply the federal standard. See, e.g., Hubbard v. Quality Oil Co., 268 N.C. 489, 151 S.E.2d 71 (1966) (proper test is whether additional light can be thrown on question under investigation by qualified expert). But see Glenn v. Smith, 264 N.C. 706, 142 S.E.2d 596 (1965) (testimony about the propensity of an automobile to fishtail not allowed).

46. Holmgren v. Massey-Ferguson, Inc., 516 F.2d 856 (8th Cir. 1975) (witness with Ph.D. in engineering mechanics and familiar with principles of agricultural machinery would have provided assistance to the jury concerning the defective design of a corn picker); Englehart v. Jeep Corp., 122 Ariz. 256, 594 P.2d 510 (1979) (applying federal rules, court held that experts could draw conclusions more precisely and scientifically than the average juror).

47. Salem v. United States Lines Co., 370 U.S. 31, (1962) (expert testimony may be excluded if jury is as capable of comprehending primary facts and drawing correct conclusions as are witnesses who have had special training); Shell Oil Co. v. Gutierrez, 119 Ariz. 426, 581 P.2d 271 (Ct. App. 1978) (jury as competent as an expert to determine whether the warning 'Flammable Liquid' was adequate).

48. 381 So. 2d at 230.

49. Because the appellate decision came down in 1978, the trial must have occurred well before the Florida Evidence Code took effect on July 1, 1979.

50. See text accompanying notes 58-84 infra.

requisite knowledge, skill, experience, training or education to qualify as an expert in his particular field.[51] If the witness can assist the trier of fact, he should qualify.[52] Once the witness is classified as an expert, questions related to his background and credibility affect the weight to be given his testimony, not its admissibility.[53]

Of the four cases under consideration, only in *Hill* did the appellate court analyze the qualifications of the human-factors witness. Presumably, this question was not at issue in later cases because of the difficulty of establishing that the trial judge abused his discretion, a condition for proving an admission error.[54] To support the trial court's admission of expert testimony, the *Hill* court concluded from Dr. Scherer's testimony that he had considerable academic and practical experience in his field of psychology. Specifically, the court referred to Dr. Scherer's statement that he had done "research relating to motivation, attention, and other variables in personal history which relate to a person's inability to work . . . [and] research into the subject of the requisite knowledge and ability for the operation of machinery."[55] Neither operation of machinery nor inability to work, however, seems to have any bearing on the subject matter of the expert's testimony—the effect of certain environmental factors on the perception of the average automobile driver. When an expert's testimony departs from his field of knowledge, any further opinions may mislead the trier of fact. Thus, courts must consider whether a witness qualifies as an expert with respect to the subject matter of his proposed testimony.[56] Although Dr. Scherer would certainly qualify as an expert in his areas of specialty, the *Hill* court was not warranted in admitting his testimony without establishing the relationship between his credentials and perception problems.[57] Neither an unqualified witness nor an expert testifying outside his

51. Fed. R. Evid. 702. See generally C. McCormick, supra note 34, § 13.

52. United States v. Lopez, 543 F.2d 1156 (5th Cir. 1976) (trial judge made meaningful examination of psychologist's qualifications before excluding his testimony), cert. denied, 429 U.S. 1111 (1977).

The tests for appropriateness of subject matter and qualifications of prospective experts are apparently the same—assistance to the trier of fact. Thus, while expert testimony on a particular topic may be appropriate, a particular expert witness may not be personally capable of providing the requisite assistance.

53. United States v. Fortune, 513 F.2d 883, (5th Cir.), (trier of fact to determine questions of credibility), cert. denied, 423 U.S. 1020 (1975); Behm v. Division of Administration, 336 So. 2d 579 (Fla. 1976) (jury to decide credibility to be given expert testimony).

A court may still reject expert testimony if a reasonable basis for the opinions is not established. For example, an accident reconstruction expert may not give an opinion on the point of impact based solely on eyewitness testimony, since experts in this field generally require more information to formulate an opinion. Fed. R. Evid. 703, Adv. Comm. Note.

54. Berdeaux v. Gamble Alden Life Ins. Co., 528 F.2d 987, 990 (5th Cir. 1976); Buchman v. Seaboard Coast Line R.R., 381 So. 2d 229, 230 (Fla. 1980).

55. 250 So. 2d at 314. No other qualifications or explanations were given by the *Hill* court.

56. Perkins v. Volkswagen of Am., Inc., 596 F.2d 681 (5th Cir. 1979) (specialist in mechanical engineering, who had no automobile design background, allowed to testify on general engineering principles but not as an expert on automobile design). But cf. United States v. Viglia, 549 F.2d 335, (5th Cir.) (expert whose principal area of practice was pediatrics and who did not treat obesity held to have sufficient medical training to testify on the use of controlled substances to treat obesity), cert. denied, 434 U.S. 834 (1977).

57. When expert testimony is based upon false assumptions, Florida courts have not always

realm of expertise can provide the necessary assistance to the jury required both by Florida's pre-Federal Rules test and by rule 702.

Although recognizing the importance of establishing the credentials of an expert witness, the Florida courts totally failed to consider another crucial test of admissibility of human-factors testimony—whether it qualifies as scientific evidence.[58] Not every ostensibly scientific technique should be recognized as the foundation for expert testimony. The trier of fact may be unduly influenced by an expert claiming a scientific basis for his opinion because of the expert's apparent objectivity. Moreover, rebuttal of such an opinion can be accomplished only through use of other experts or by cross-examination based on a thorough acquaintance with the underlying principles.[59]

If the state of the expert's field has not developed to the point that his opinions have a reasonable scientific basis, the Federal Rules of Evidence do not permit the testimony.[60] Opinions that fail to satisfy this requirement cannot furnish assistance to the jury as required by rule 702.[61] Nevertheless, there must be an opportunity for new fields of scientific and specialized knowledge to be verified by courts as reliable. "[N]either newness nor lack of absolute certainty suffices to render it inadmissible. . . . Every useful new development must have its first day in court."[62] During that first day in court, however, the judge must scrutinize innovative developments before ruling that the proferred expert testimony is admissible.[63]

Two recent decisions by federal courts of appeals analyze many of the factors that should be considered when determining the admissibility of a new scientific method. The Court of Appeals for the Second Circuit, in *United*

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followed the rule that questions concerning the evidence go to its weight, not its admissiblity. See E.R. Squibb and Sons, Inc. v. Stickney, 274 So. 2d 898 (Fla. 1st Dist. Ct. App. 1973) (jury verdict not sustained because expert's conclusion that a product was defective and unfit for its intended use was unsupported by the facts; therefore, the testimony had no probative value), cert. denied, 416 U.S. 961 (1974).

58. See United States v. Baller, 519 F.2d 463 (4th Cir.), cert. denied, 423 U.S. 1019 (1975). See generally Comment, The Psychologist as Expert Witness: Science in the Courtroom, 38 Md. L. Rev. 539 (1979).

59. United States v. Brady, 595 F.2d 359, 362-63 (6th Cir. 1979).

The traditional standard for admission of scientific evidence is promulgated in Frye v. United States, 293 F. 1013 (D.C. Cir. 1923). For a scientific principle or discovery to be admissible, the *Frye* test required that the principle "be sufficiently established to have gained general acceptance in the particular field in which it belongs." Id. at 1014.

Recent decisions have emphasized that reliability of the scientific technique is the most important factor in determining general acceptance. E.g., United States v. Franks, 511 F.2d 25 (6th Cir.), cert. denied, 422 U.S. 1042 (1975).

60. United States v. Fosher, 590 F.2d 381 (1st Cir. 1979). See generally C. McCormick, supra note 34, § 13.

61. Cf. United States v. Scavo, 593 F.2d 837 (8th Cir. 1979) (testimony must be helpful to the trier of fact and is also subject to exclusion under rule 403 if it will confuse the issues).

62. United States v. Stifel, 433 F.2d 431, 438 (6th Cir. 1970), cert. denied, 401 U.S. 994 (1971).

A scientific technique developed specifically for use in a particular trial may even be admissible, giving further credence to the view that reliability is the courts' major concern. *See* Coppolino v. State, 223 So. 2d 68 (Fla. 2d Dist. Ct. App.) (expert testimony evaluating test developed for trial to determine presence of poison in body of defendant's wife held admissible), appeal dismissed, 234 So. 2d 120 (Fla. 1969), cert. denied, 399 U.S. 927 (1970).

63. See C. McCormick, supra note 34, § 203.

States v. Williams,[64] permitted spectrographic voice analysis[65] to be presented through expert testimony. The court emphasized the high percentage of successful voice identifications as well as the expert's certification in his field and extensive practical experience. The expert's opinion had a minimal potential to mislead, since the jury could examine the objective components of the tests. Finally, normal safeguards were available, including the opportunity to challenge the reliability of the equipment and the technique of analysis, and to question the expert's qualifications.[66]

In *United States v. Fosher*[67] the Court of Appeals for the First Circuit held that the trial court did not abuse its discretion in excluding a psychologist's testimony concerning the unreliability of eyewitness identifications. The court reasoned that proof offered to assist the jury must provide a system of analysis that will be reasonably likely to add to the common understanding of a particular issue.[68] Thus, an expert must give some indication of how he reached his opinion. With no such system evident in *Fosher*, the court determined that the jury was as capable of assessing an eyewitness' ability to perceive and remember an assailant as the proffered expert. The *Fosher* court upheld the trial court's conclusion that the expert testimony was not "sufficiently beyond the ken of lay jurors to satisfy Rule 702."[69] Moreover, admission of opinions based on scientific subject matter of unproven reliability would raise a substantial danger of prejudice, given the aura of reliability surrounding scientific evidence.[70]

Florida courts have reached the same conclusion in excluding opinions on the unreliability of eyewitness identification. In *Nelson v. State*[71] the expert never examined the victim of an attack who had subsequently identified her assailant. The trial court rejected testimony concerning factors that might affect perception and the memory process in general. On review, the appellate court supported this exclusion, observing that the expert's opinion was largely comprised of hypotheses, theories, generalization and speculation.[72] Courts in

64. 583 F.2d 1194 (2d Cir. 1978).

65. This is commonly known as voiceprint identification. It involves examination of spectrographic representations of the human voice, with the skill of the examiner being the critical factor in the degree of success. C. McCormick, supra note 34, § 204, at 489 n.31. See generally Kamine, The Voiceprint Technique, 6 San Diego L. Rev. 213 (1969).

66. 583 F.2d at 1198-1200. But see People v. King, 266 Cal. App. 2d 437, 72 Cal. Rptr. 478 (1966) (even extensive qualifications of the expert in the fields of speech and acoustical engineering may be insufficient to justify admissibility).

67. 590 F.2d 381 (1st Cir. 1979).

68. Id. at 383. The court was obviously concerned that expert testimony in this area could be quite arbitrary. If the jury does not have a means to interpret the testimony, it is apparent that the expert opinions will be of no assistance.

69. Id. at 383.

70. The court held that, "[q]uite apart from questions of limited relevance and reliability," rule 403 of the Federal Rules of Evidence allows the trial court to exclude evidence whose probative value is outweighed by the danger of confusion and prejudice. Id. The possibility of prejudice in criminal cases, such as *Fosher*, may also raise constitutional questions about the right of a defendant to a fair trial.

71. 362 So. 2d 1017 (Fla. 3d Dist. Ct. App. 1978).

72. Id. at 1021.

other jurisdictions have generally concurred.[73]

Many of these weaknesses are found in the human-factors cases. For example, there is no evidence that any of the witnesses had firsthand knowledge of the settings of the accidents. At best they developed familiarity by studying photographs and survey maps,[74] at worst through an attorney's recitation of facts in a hypothetical question.[75] As in *Nelson*, the expert opinions dealt not with the perceptions and reactions of the specific person involved in the accidents but with how the general population, as typified by the average[76] or reasonable[77] man, would have responded to this situation.

Some human-factors testimony goes further and becomes entirely conjectural. In the *Cole* case, Dr. Scherer stated that looking into the sun would have made it more difficult for plaintiff to judge the depth factor. That plaintiff dove in the direction of the sun, however, was not deduced from testimony but from the expert's examination of a map of the region.[78] Dr. Scherer was also speculating when he concluded that plaintiff may have acted faster on the day of the accident simply because it was a holiday.[79] Furthermore, he failed to establish the basis for his determination that a holiday causes reckless actions.[80] Without further explanation or justification for his conclusion, Dr. Scherer's statement does not appear to satisfy the assistance test.

Similarly, Professor Korobow's conclusion in *Buchman* that at the minimum eighty percent of the population would not have been able to hear the train whistle lacks a method of analysis that the jury could use to independently evaluate the testimony.[81] More important, however, is whether such a conclusion is reliable. The voice print evidence in *Williams* showed a high correlation between actual voices and test identifications.[82] Without a "demonstrable, objective procedure for reaching the opinion and qualified persons who can either duplicate the result or criticize the means by which it was reached,"[83] testimony based on a scientific field should not be admitted. The

73. See State v. Galloway, 275 N.W.2d 736 (Iowa 1979); State v. Porraro, 404 A.2d 465 (R.I. 1979). But see People v. Hurley, 95 Cal. App. 3d 895, 157 Cal. Rptr. 364 (1979) (dissenting opinion) (testimony related to misidentifications would be of assistance).

The *Galloway* case indicates a recurring problem with expert testimony, that of the professional witness. Defendant in this Iowa case offered Dr. Elizabeth Loftus as the expert, the same witness whose testimony was rejected in the Florida *Nelson* decision. For proposals to improve the practice of employing experts, see C. McCormick, supra note 34, § 17.

74. Public Health Foundation v. Cole, 352 So. 2d at 880.

75. See Seaboard Coast Line R.R. v. Hill, 250 So. 2d at 314.

76. Id. at 315; Seaboard Coast Line R.R. v. Kubalski, 323 So. 2d at 33.

77. 352 So. 2d at 879. See also Seaboard Coast Line R.R. v. Buchman, 358 So. 2d at 840 (expert opinion that a minimum of 80% of population would not have been able to hear whistle).

78. 352 So. 2d at 880. Dr. Scherer himself characterized as only a possibility his conclusion that plaintiff was unable to see because of the direction she was facing. Id.

79. Id.

80. Scherer testified, "[I]t is the Fourth of July. She is feeling happy. She is enjoying herself. It is a holiday, and she just jumps so that the emotional tone was set for doing something like this." Id.

81. 358 So. 2d at 840.

82. 583 F.2d at 1198-99.

83. United States v. Brady, 595 F.2d 359, 363 (6th Cir. 1979).

unproven reliability of human-factors testimony leads one to the conclusion that the jury has the ability to analyze the same variables and make determinations just as valid as those of the experts.[84]

While the Florida courts committed a serious error by failing to establish the reliability of human-factors testimony, they made a graver mistake by accepting testimony concerning the behavior of the reasonably prudent person. Until recent years a general doctrine existed that no witness, expert or not, could state opinions or conclusions about an ultimate issue of fact. Issues of law, such as whether a person's action constituted negligence, were even further removed from the province of witnesses than issues of fact.[85] Following the general trend of relaxing this doctrine, Federal Rule of Evidence 704 (rule 703 in Florida) formally removes the bar to testimony that includes an ultimate issue of fact.[86] All other requirements for admission must still be satisfied.[87]

Decisions by state supreme courts in Oregon and North Dakota are indicative of conflicting approaches to the question of admitting testimony on legal standards. In the Oregon case,[88] which involved facts similar to those in the Florida human-factors cases, the court held that an expert in railroad crossing safety should not have been permitted to testify that the crossing was extrahazardous. The Oregon test of this "extrahazardous" standard is whether a reasonably prudent person can use a crossing safely. Despite the witness' experience in designing railroad crossings, the court ruled him incompetent to aid the jury on this question because he possessed no special knowledge of the characteristics of the reasonably prudent person.[89] The court barred only the conclusion about the standard of law, however, and allowed testimony on the factors that increased the dangerousness of the crossing and the preventive measures that could have been taken.

The North Dakota court,[90] holding that a qualified expert could give an opinion whether a crossing was extrahazardous, applied rule 702 and deter-

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84. Psychological evidence may fail to provide accuracy greater than would occur by chance. See Comment, supra note 58, at 599. Though advocating curtailment of psychologists testifying as experts, the author of this Comment supports a continuation of the psychologist's role in interpreting human behavior based on firsthand knowledge. Id. at 599 n.286.

85. See generally C. McCormick, supra note 34, § 12.

North Carolina retains the traditional "ultimate issue" rule. The form of the question may determine admissibility of the opinion. Given a hypothetical question, an expert may state what causes would lead to a particular result, yet an assertion that the result was actually produced by a particular cause is inadmissible. Also inadmissible is expert testimony that is speculative or conjectural. Hubbard v. Quality Oil Co., 268 N.C. 489, 151 S.E.2d 71 (1966).

86. Fed. R. Evid. 704; Fla. Stat. Ann. § 90.703 (West 1979).

87. United States v. Scavo, 593 F.2d 837, 844 (8th Cir. 1979). See Fed. R. Evid. 704, Adv. Comm. Note.

88. Koch v. Southern Pac. Co., 266 Or. 335, 513 P.2d 770 (1973).

89. Id. at 343-44, 513 P.2d at 774. The court noted that the expert was asked "not what a reasonably prudent railroad crossing designer or builder would do, but whether a reasonably prudent automobile driver could safely use the crossing . . . ," and held that this was "not the subject of expert testimony." Id. at 347, 513 P.2d at 775. But see Harrell v. City of Belen, 93 N.M. 601, 603 P.2d 711 (1979) (clinical psychologist permitted to give opinion as to what would have been a reasonable action for the police to have taken to prevent decedent's suicide).

90. South v. National R.R. Passenger Corp., 290 N.W.2d 819 (N.D. 1980).

mined that an expert could offer assistance on a legal question. The expert was a civil engineer who had researched highway traffic patterns as well as driver behavior and reactions. Since he was intimately familiar with both design of roads and how drivers react to dangers, the expert could assist the jury in determining whether the crossing was extrahazardous.[91]

Compared to the North Dakota approach, the Oregon court's view—that no expert could ever be qualified to voice an opinion concerning the behavior of the reasonable person—is more consistent with the tradition of leaving the determination of ultimate legal issues to the trier of fact.[92] The Federal Rules of Evidence seem to be in accord with this reasoning, although there is no specific exclusion of opinions on ultimate legal issues. Two justifications for exclusion may be derived from the assistance requirement of rule 702. First, no witness can be an expert on the behavior of the reasonably prudent person, since the reasonable person is a mythical one, "not to be identified with any ordinary individual."[93] Accordingly, an expert has no basis for his testimony and cannot satisfy the assistance test. Second, opinions that only instruct the trier of fact on which result to reach also fail to provide the requisite assistance.[94]

Of the four Florida human-factors cases discussed above, the *Cole* decision went the farthest in admitting improper legal standard testimony. Dr. Scherer testified that a reasonably prudent person could have had plaintiff's accident,[95] thus effectively concluding that plaintiff was not negligent. Dr. Scherer's qualifications to testify as an expert on perception difficulties, appear to be questionable,[96] and certainly do not indicate that he could be classified as an expert on the reasonably prudent person standard. His testimony would also be barred under the traditional approach, which reserves determination of ultimate legal issues to the jury alone.

How the Federal Rules of Evidence will affect future decisions about admission of human-factors testimony in Florida and other jurisdictions is unclear. The standard for admission of expert testimony since adoption of the Federal Rules of Evidence, is whether proffered opinions will assist the trier of fact. The former test was whether the subject matter of the opinion exceeds the scope of knowledge of the average layperson. Although the Florida Supreme Court in *Buchman* recognized the propriety of the current standard, the court applied it only superficially. Since the jury had to consider questions

91. Id. at 831 (the court specified that its determination of admissibility was made with respect to rule 702).

92. See C. McCormick, supra note 34, § 12.

93. W. Prosser, The Law of Torts, § 32, at 151 (4th ed. 1971).

94. Fed. R. Evid. 704, Adv. Comm. Note (opinions that tell the jury what result to reach do not meet the rule 702 requirement of assisting the jury and also violate the rule 403 provision against evidence that, although relevant, wastes time). See Stoler v. Penn Cent. Transp. Co., 583 F.2d 896 (6th Cir. 1978) (although noting that there has not been a conclusive determination concerning admissibility of ultimate legal opinions, court held that exclusion of such an opinion was not an abuse of discretion).

95. 352 So. 2d at 879-81.

96. See text accompanying notes 55-57 supra.

of driver reaction time and whistle audibility, subjects on which two human-factors specialists had testified at trial, the court held that the assistance requirement was satisfied.[97] By failing to determine whether human-factors testimony met the level of reliability necessary to qualify as scientifically based, the supreme court created the substantial possibility that the foundation of the jury's negligence determination consisted of invalid expert conclusions.

Similarly, prejudice[98] arises when a witness testifies on a subject outside his area of expertise, as in *Hill*. And if a witness is not an expert on the specific topic that he addresses, his opinions cannot assist the jury. Finally, conclusions about the behavior of the reasonably prudent person only declare what result the jury should reach rather than provide any assistance. Such testimony should always be rejected as being "an unwarranted incursion into the sphere of influence belonging solely to the jury."[99]

To counter the danger of prejudice, the Florida Evidence Code provides for significant attorney input into the decision to admit expert testimony. Rule 705 stipulates that a party opposing admission of an expert opinion may conduct a voir dire examination of the proposed witness before trial. If prima facie evidence that the witness lacks sufficient basis for his opinion is established, the court will bar the testimony, subject to subsequent proof of the basis.[100] Federal rule 705 allows cross-examination of the expert at trial concerning his basis but does not specifically provide for pretrial probing.[101] Thus, an alert attorney in Florida may prevent testimony before the jury by an expert who is not sufficiently qualified or whose field is not scientifically reliable. This system is more effective than allowing an expert to testify and then relying on cross-examination to correct misconceptions in the minds of the jurors.

It remains the ultimate responsibility of the courts themselves, however, to bar opinions on legal standards. If the jury is to have a more meaningful role in the trial process than that of a conduit for experts' determinations, conclusions on whether particular conduct satisfies the applicable legal standard should remain solely with the jury. Human-factors testimony should be challenged by opposing counsel and excluded by the court unless it is demonstrated that the evidence has scientific reliability. Otherwise, there is a

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97. 381 So. 2d at 230.

98. If the prejudicial impact of expert opinion evidence substantially outweighs its probative value, such evidence may be excluded by the trial court. United States v. Milton, 555 F.2d 1198 (5th Cir. 1977).

The Florida courts that rejected human factors testimony were concerned with the prejudicial impact that improper expert testimony could have on a jury. That the jury might have reached the same verdict based on evidence independent from the expert opinions did not justify deeming the expert opinions harmless error. *Kubalski*, 323 So. 2d at 34. Moreover, unnecessary expert testimony can have the effect of unduly influencing the jury's determination of negligence. *Buchman*, 358 So. 2d at 842.

99. 352 So. 2d at 880 (Downey, J., concurring).

100. Fla. Stat. Ann. § 90.705(2) (West 1979).

101. Fed. R. Evid. 705.

significant danger that the functions of the jury will be usurped by the human-factors "expert."

ROBERT LYMAN DEWEY