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A PRACTICAL GUIDE TO THE ADMISSIBILITY OF NOVEL EXPERT EVIDENCE IN CRIMINAL TRIALS UNDER FEDERAL RULE 702

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I. INTRODUCTION

Under the aegis of Federal Rule of Evidence 702,[1] or its state equivalent,[2] federal and state criminal trial courts are being inundated with a broad spectrum of novel expert testimony on topics as diverse as the modus operandi of pimps,[3] child sex abuse accommodation syndrome,[4] genetic fingerprinting,[5] and gas chromatography mass

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1. "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.

2. Twenty-six states have adopted FEDERAL RULE OF EVIDENCE 702 verbatim. 3 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE ¶ 702[06] (1986). They are: Alaska, Arizona, Arkansas, Colorado, Delaware, Idaho, Iowa, Maine, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming. The Military Rules of Evidence have also adopted a verbatim version of Federal Rule of Evidence 702. *Id.* Another six states have adopted rule 702 with no more than minor semantic differences. They are: Florida, Hawaii, Michigan, Nevada, North Carolina, and Rhode Island. Rhode Island substitutes "fact or opinion" for the federal language "opinion or otherwise;" arguably, this may make a substantive change in the meaning of the rule. *See id.* Puerto Rico's expert evidence rule is also very similar to the federal rule 702. *Id.*

For purposes of the present discussion, it is assumed that federal precedent, though not controlling in a state court, is persuasive authority on the implementation and interpretation of any state rule of evidence which is analogous to Federal Rule of Evidence 702. *See, e.g.*, Campbell v. State, 718 S.W.2d 712, 717 (Tex. Crim. App. 1986) (Texas intended to adopt wording and interpretation of federal rule); Rodda v. State, 745 S.W.2d 415, 418 (Tex. App.—Houston [14th Dist.] 1988, pet. ref'd). In discussing the identical wording of the Texas and federal relevancy rules of evidence, the court noted that "[w]hile we are not bound by lower federal court decisions, in order to advance the harmony in judicial construction of the rules of evidence, greater than usual deference should be given to the construction of the federal rules by the federal courts". *Id.*

Similarly, decisions rendered by state courts which have adopted an expert witness rule similar to Federal Rule of Evidence 702 are useful in analyzing the proper scope of that rule in any federal jurisdiction. Thus, throughout this article, the author cites both federal and state authority as well as scholarly material dealing with expert witness issues from all jurisdictions which have adopted an expert witness rule similar to federal rule 702. As more jurisdictions adopt formal codes of evidence based upon the federal rules, practitioners, scholars, and judges may reasonably expect that the mode of analysis, if not the results, will achieve some degree of homogeneity.

3. *E.g.*, United States v. Anderson, 851 F.2d 384, 392-94 (D.C. Cir. 1988), *cert. denied sub. nom.*, Anderson v. United States, 488 U.S. 1012 (1989).

4. *E.g.*, People v. Sanchez, 208 Cal. App. 3d 721, 734-35, 256 Cal. Rptr. 446, 453-54, *cert. denied*, __U.S.__, 110 S. Ct. 286 107 L. Ed.2d 266 (1989); State v. Middleton, 657 P.2d 1215, 1220-21 (Or. 1983); Kirkpatrick v. State, 747 S.W.2d 833, 835 (Tex. App.—Dallas 1988, pet. ref'd).

5. *See infra* notes 187-97 and accompanying text.

spectrometry.[6] Unfortunately, few judges or lawyers have the scientific training to weigh the merits of such testimony.[7] Few are knowledgeable or even interested[8] in the processes by which novel scientific theories are born and tested.[9] Predictably, judicial reaction to novel expertise has been uneven and inconsistent.[10]

This article, in seven parts, attempts to develop a framework for admissibility of the full spectrum of expert testimony now being offered in criminal trials. Part II outlines the current evidentiary dilemma facing practitioners and trial courts arising from the per se

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6. Jones v. State, 716 S.W.2d 142, 154 (Tex. App.—Austin 1986, pet. ref'd).

7. *See, e.g.*, Bazelon, *Science and Uncertainty: A Jurist's View*, 5 HARV. ENVTL. L. REV. 209, 209-11 (1981) (courts lack technical competence to resolve scientific controversies); Markey, *Jurisprudence or "Juriscience"?*, 25 WM. & MARY L. REV. 525, 540-42 (1984) (suggesting that judges must learn to integrate technology into framework of legal values; sets out fifteen "Rules of Technological Adjudication").

8. Professor Moenssens relates that, according to Michael Graham, who has attended numerous annual judicial conferences, of all the topics discussed at these symposia, "none was so unpopular with the judges as scientific evidence." Moenssens, *Admissibility of Scientific Evidence—An Alternative to the Frye Rule*, 25 WM. & MARY L. REV. 545, 545 n.2 (1984) (quoting *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 220 (1983)). Professor Moenssens attributes this lack of concern to a basic scientific illiteracy by both lawyers and judges. *Id.*

"The sad truth is that [defense] attorneys simply are incapable by education, and too often by inclination, to become sufficiently familiar with scientific evidence to discharge their responsibilities toward the administration of justice." *Symposium on Science and the Rules of Evidence*, 99 F.R.D. at 221 (remarks of Joseph Nicol).

9. Professor Moenssens has outlined the six major stages of scientific development of a novel forensic scientific technique as:

Stage 1: A theory is postulated.

Stage 2: Experiments are designed to verify the validity of the theory.

Stage 3: If the theory's validity is not disproven after a searching inquiry and empirical testing, it is "proven" valid and a court then appropriately may take judicial notice of the theory. This result is unlikely to occur at this stage, however, because no vehicle exists for translating the theory into relevant evidence in a law suit.

Stage 4: A technique is devised, or an instrument is designed and built, that will permit the theory to be applied practically in a forensic setting.

Stage 5: After devising a methodology, further tests must demonstrate a positive correlation between the results and the underlying theory. This stage is necessary to prove that the effects observed are not the result of some unidentified cause.

Stage 6: After the test has been shown to yield reliable results that are relevant to disputed issues in a law suit, a court then may admit these results properly into evidence, and a qualified expert may interpret the results before the jury.

Moenssens, *supra* note 8 at 556.

10. *See* Lederer, *Scientific Evidence—An Introduction*, 25 WM. & MARY L. REV. 517, 518 (1984) (novel scientific evidence considered essential in many administrative and civil trials, while acceptance in criminal trials "unevenly received").

rules that courts have adopted for exclusion or admission of scientific evidence. Part III examines constitutional considerations in the admission of expert testimony. Part IV sets forth the general mandate of rule 702: the requirement for a threshold showing of the "assistance" that an expert must provide to the factfinder in either understanding evidence already admitted or in determining a fact in issue. Part V focuses upon the requirement for reliability of novel expertise and suggests a single mode of analysis for the admission of all types of novel expert testimony under rule 702.[11] Part VI discusses the countervailing considerations of rule 403 which might legitimately lead a court to exclude expert testimony that has met the threshold admissibility standard of rule 702 including unfair prejudice, confusion of the issues, and undue consumption of time. Part VII considers some alternatives to shutting the trial court door on novel expert evidence when there are countervailing considerations which should be taken into account.

The article concludes that as the proffered expert evidence moves from the general to the specific, and from background information to specific data and opinion in a case, the concern for reliability and scientific validity increases along a single continuum. While certain aspects of both the *Frye* test and the McCormick general relevancy approach are incorporated, neither is adopted wholly. Instead, the approach advocated here is to focus the judge's attention on the particular expert's role in the trial. This approach would allow experts to testify to the extent, but only to the extent, that their expert testimony is helpful to a specific jury.

II. THE CURRENT EVIDENTIARY DILEMMA

Courts have not developed a coherent methodology for determining the admissibility of the full range of expert testimony under rule 702 of the Federal Rules of Evidence. Instead, they have announced and relied on per se rules of admission or exclusion of a specific type of expertise. In excluding or admitting novel expert evidence, courts have often varied in their opinion on whether offered expertise exceeds the common understanding of the jury,[12] invades the province

11. The present article deals only with the problem of the admissibility of expert testimony on a specific issue. It does not attempt to deal with the issues surrounding the basis for an expert's opinion, covered by rules 703 and 705.

12. *Compare* State v. Saldana, 324 N.W.2d 227, 230 (Minn. 1982) (forbidding expert tes-

of the jury,[13] conforms to the requirements of the *Frye*[14] test,[15] or is

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timony on rape trauma syndrome because not reliable as diagnostic device; such expertise did not surpass jury's "common sense evaluation") *with* State v. Myers, 359 N.W.2d 604, 610 (Minn. 1984) (testimony permitted when victim is a child since average juror does not understand these concepts) *and* People v. Reid, 123 Misc. 2d 1084, 1085-88, 475 N.Y.S.2d 741, 742 (1984) (victim's reaction to rape is complex and not within ordinary person's common understanding and experience) *and* State v. Bachman, 446 N.W.2d 271, 275 (S.D. 1989) (expert evidence on rape trauma syndrome assisted jury understanding in matters outside a layman's common knowledge) *and* Key v. State, 765 S.W.2d 848, 850 (Tex. App.—Dallas 1989, pet. ref'd) (expert testimony on "date rape" was of "appreciable aid" to jury and presented "a body of expertise with which the jurors were unfamiliar"). Courts also disagree on the admissibility of expert testimony concerning the reliability of eyewitness testimony. *Compare* United States v. Affleck, 776 F.2d 1451, 1458 (10th Cir. 1985) (not error to exclude testimony of "memory expert" since "[t]he average person is able to understand that people forget") *and* United States v. Amaral, 488 F.2d 1148, 1153 (9th Cir. 1973) (expert testimony on reliability of eyewitness identification excluded because "the effects of stress on perception can be effectively communicated to the jury by probing questioning of the witness") *and* State v. Rich, 549 A.2d 742, 743 (Me. 1988) (expertise on reliability of eyewitness identifications not beyond common knowledge of ordinary jury) *and* State v. Lawhorn, 762 S.W.2d 820, 823 (Mo. 1988) (excluding expert testimony on reliability of eyewitness identification since jurors may use common sense regarding weight of eyewitness evidence) *with* United States v. Downing, 753 F.2d 1224, 1229-31 (3rd Cir. 1985) (expert testimony concerning reliability of eyewitness identification could assist jury, thus meeting rule 702 helpfulness requirement) *and* State v. Chapple, 660 P.2d 1208, 1220-21 (Ariz. 1983) (reliability of eyewitness testimony admitted because average juror unaware of identification and memory variables) *and* Bowden v. State, 761 S.W.2d 148, 157 (Ark. 1988) (photographer's expertise regarding effect of low light on tan truck admissable because expertise beyond average juror's understanding) *and* People v. McDonald, 690 P.2d 709, 720-21 (Cal. 1984) (expert eyewitness reliability evidence sufficiently beyond common experience to assist jury). Courts disagree as to whether testimony regarding the battered woman syndrome is admissible. *Compare* Fielder v. State, 756 S.W.2d 309, 321 (Tex. Crim. App. 1988) (expert testimony admissable to assist jury in understanding conduct of woman who stays in abusive relationship) *and* State v. Kelly, 478 A.2d 364, 377 (N.J. 1984) (battered woman syndrome expert testimony will aid jury in determining whether reasonable person would have believed imminent danger to life existed) *with* Mullis v. State, 282 S.E.2d 334, 337 (Ga. 1981) (battered woman syndrome testimony not helpful to jury).

13. *Compare* United States v. Brown, 540 F.2d 1048, 1054 (10th Cir. 1976) (expert eyewitness identification testimony usurps jury's function) *with* People v. McDonald, 690 P.2d 709, 722-23 (Cal. 1984) (expert eyewitness identification testimony does not invade province of jury). Courts also vary regarding the admissibility of rape trauma syndrome. *Compare* State v. Black, 745 P.2d 12, 19 (Wash. 1987) (rape trauma syndrome expert testimony invades jury's province) *with* State v. Bachman, 446 N.W.2d 271, 277 (S.D. 1989) (rape trauma syndrome expert testimony did not invade jury's province) *and* State v. Middleton, 657 P.2d 1215, 1221 (Or. 1983) (expert testimony on characteristics of typical child rape victim did not invade jury's province).

14. Frye v. United States, 293 F. 1013 (D.C. Cir. 1923). The *Frye* court, in announcing its oft-repeated rule, stated:

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

scientifically unreliable.[16] Thus, courts in Maine might always exclude Doctor Doe's testimony on rape trauma syndrome while courts in Florida may always find that his testimony assists the jury. Similarly, Paul's polygraph test might be considered scientifically reliable and thus admissible in a Houston federal courtroom while that very

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thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.

Id. at 1014 (excluding "deception test" results). Significantly, the *Frye* opinion did not hold that the specific data upon which an expert relies must be generally accepted within the scientific community, nor did it hold that the opinion the expert holds is one generally accepted within the appropriate community. The *Frye* court spoke only to the general scientific "principle" itself.

15. *Compare* United States v. Gillespie, 852 F.2d 475, 481 (9th Cir. 1988) (child abuse therapist testimony regarding child's behavior with anatomically correct dolls inadmissible under *Frye* general acceptance test) *and* United States v. Addison, 498 F.2d 741, 745 (D.C. Cir. 1974) (voice spectrograph does not satisfy *Frye* general acceptance test) *and* People v. Leon, 263 Cal. Rptr. 77, 84 (Cal. App. 2d Dist. 1989) ("child sexual abuse accommodation syndrome" not scientically accepted under *Frye* test) *and* People v. Gonzales, 329 N.W.2d 743, 748 (Mich. 1982) (hypnotically refreshed testimony does not meet *Frye* general acceptance standard) *with* State v. Marks, 647 P.2d 1292, 1299 (Kan. 1982) (rape trauma syndrome testimony admitted under *Frye* general scientific acceptance test) *and In re* Cheryl H., 200 Cal. Rptr. 789, 800-01 (1984) (psychiatric expertise on child sexual abuse accommodation syndrome admissible under *Frye*) *and* State v. Armstrong, 329 N.W.2d 386, 393 (Wis. 1983) (*Frye* limited to expert testimony and not applicable to hypnotically refreshed testimony; if *Frye* had applied, expertise did meet *Frye* general acceptance standards).

For a list of federal circuits and state courts that apply the traditional *Frye* test see *Symposium on Science and Rules of Evidence*, 99 F.R.D. 187, 199-201 (1983) (Gianelli's paper).

16. In *United States v. Fosher*, for example, the First Circuit zealously excluded the defense expert's psychological testimony on eyewitness identifications because the testimony was not relevant, would have confused the jury, and did not assist the trier of fact. United States v. Fosher, 590 F.2d 381, 383-84 (1st Cir. 1979). The court further reasoned the testimony would have wasted time and was not based on a generally accepted body of scientific knowledge. In conclusion, the court stated that the problems of eyewitness identification could be sufficiently conveyed through cross-examination. *Id. But see* United States v. Downing, 753 F.2d 1224, 1242-43 (3d Cir. 1985) (expert psychological testimony on eyewitness testimony may be sufficiently reliable); United States v. Smith, 736 F.2d 1103, 1106-07 (6th Cir. 1984) (expert testified that science of eyewitness perception contained reliability of any psychological research, and therefore conformed to generally accepted theory). Courts disagree on the reliability of polygraph evidence. *Compare* United States v. Piccinonna, 885 F.2d 1529, 1536-37 (11th Cir. 1989) (*Frye* rule does not bar polygraph evidence per se since sufficiently accepted to allow if unfair prejudice minimized) *with* United States v. Alexander, 526 F.2d 161, 166 (8th Cir. 1975) (scientific acceptability and reliability of results insufficient to warrant admission). The reliability of battered woman syndrome evidence has been the subject of disagreement as well. *Compare* Ibn-Tamas v. United States, 407 A.2d 626, 631-39 (D.C. 1979) (admissible since methodology sufficiently advanced to be considered a reliable psychological technique) *with* State v. Thomas, 423 N.E.2d 137, 140 (Ohio 1981) (not sufficiently developed scientific knowledge and methodology), *aff'd sub nom.*, Thomas v. Arn, 474 U.S. 140 (1985).

same test might be found scientifically unreliable and thus inadmissible in a Houston state courtroom.

In one recent Maine case, for example, the appellate court reversed a conviction for gross sexual misconduct with a child because the State offered expert testimony from a clinical social worker on the distinguishing characteristics of the sexually abused child.[17] The Supreme Judicial Court of Maine held that admission of such testimony was plain error and implied that psychological expertise which is based upon "clinical features" is not sufficient to establish scientific reliability.[18] This judicial methodology, focusing solely on the nature of the expertise rather than its relevance and importance in the context of the trial, does not take into account any of the following essential considerations: the relationship between the requirement of scientific reliability and the mode of the testimony; the centrality of the expertise to the disputed issues; or the likely degree of unfair prejudice or possible confusion of issues in the case. Such per se rules also suggest that "appellate courts are in the process of carving out a separate and tougher evidentiary rule for expert testimony in areas where they are skeptical of the science—clinical social work, perhaps, the psychology profession or even the social sciences generally."[19] It seems peculiar that a clinical psychologist's testimony is, as a matter

17. State v. York, 564 A.2d 389 (Me. 1989).

18. *Id.* at 390. Justice Hornby, in dissent, countered with several arguments. First, he stated that because the defendant did not object in the trial court, the record was not sufficiently developed to make any decision as to the reliability of clinical findings. He argued that appellate courts ought not "assess independently the scientific foundation for medical, engineering, chemical and other such testimony where the issue was not even raised in the trial court." *Id.* at 392 (Hornby, J., dissenting). Such a role assumes too much confidence in the legal system to assess the validity and reliability of the norms of other professions. *Id.* It also "effectively takes judicial notice that testimony like [that of the clinical social worker] can never be reliable." *Id.* Such blanket rejection closes the door almost permanently upon an entire field of expertise which is still evolving and gaining scientific support. Further, Justice Hornby rejected the notion that clinical evidence is "inherently inadequate." *Id.* He noted that Maine courts, as well as those in other jurisdictions, routinely admit clinical expertise, or its equivalent, under its expert witness rule 702. *Id.*

19. *York*, 564 A.2d at 393 (Hornby, J., dissenting); *see also* B. LEMPERT & S. SALTZBURG, A MODERN APPROACH TO EVIDENCE: TEXT, PROBLEMS, TRANSCRIPTS AND CASES 167 (2d ed. 1982), in which the authors note that:

> [C]ourts are much less hospitable to experts who seek to apply a body of specialized knowledge to problems that lay people are accustomed to dealing with or testimony that seeks to sharpen the jury's common sense by acquainting jurors with the way an expert would approach their evaluation problem and telling them what aspects of the evidence an expert would deem important.

Id.

of law, too unreliable to admit when the expertise relates to a sexually abused child, but is always admissible when the issue is the insanity of the defendant.[20] Expert testimony has been excluded in the behavioral sciences simply because "the social sciences do not claim empiricism or the scientific exactitude that physics and medicine aspire to."[21] If this were the appropriate standard of admissibility under rule 702, few experts indeed would ever take the witness stand. Certainly a defendant who relied upon an insanity defense would be severely handicapped in mounting his defense.

This judicial skepticism toward specific categories of expertise was the basis for a per se rule of exclusion of hypnotically enhanced testimony when offered by the government in *People v. Zayas*.[22] Despite the United States Supreme Court's ruling that hypnotically enhanced testimony *may* be reliable and thus admissible in a particular case,[23] the Illinois Supreme Court adopted a per se rule of exclusion because it "relieves trial judges of the burden of determining the quality of such evidence and relieves jurors of the responsibility of determining its credibility, tasks which neither are particularly well suited to perform because of the nature of the evidence."[24] Here, the appellate court relied upon selected legal articles "imploring courts to reject such evidence because of its many flaws,"[25] instead of the trial testi-

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20. *See* Ake v. Oklahoma, 470 U.S. 68, 80-81 (1985) (ideally, psychiatric testimony should assist jurors to make sensible finding about mental state of assused). In *United States v. McBride*, the appellate court reversed a district court which excluded psychiatric testimony. 786 F.2d 45, 50-51 (2d Cir. 1986). The *McBride* court stated that it was erroneous to exclude psychiatric testimony on grounds that psychiatry was "still in its infancy." *Id.*; *see also* United States v. Roark, 753 F.2d 991, 994 (11th Cir. 1985) (error to exclude psychiatric testimony designed to aid jury in determining whether defendant's inculpatory statement was psychologically coerced); United States v. Hill, 655 F.2d 512, 515-16 (3d Cir. 1981) (error to exclude psychologist's opinion that defendant's subnormal intelligence made him susceptible to entrapment). The *Hill* court held that if an expert could reach a conclusion, based on an adequate factual foundation, "such testimony must be admitted as relevant to the issues of inducement and predisposition." *Id.* at 515-16. *But see* United States v. Esch, 832 F.2d 531, 534-35 (10th Cir. 1987). In *Esch*, the court stated that it was not error to exclude the defense psychologist's testimony that the defendant had a "dependent personality" since "the testimony essentially addressed the issue of intent. An expert may not substitute her judgment as to the defendant's state of mind by testifying that because of the defendant's personality, she would not have acted in a particular manner." *Id.* at 535.

21. State v. Logue, 372 N.W.2d 151, 157 (S.D. 1985)

22. 546 N.E.2d 513 (Ill. 1989).

23. Rock v. Arkansas, 483 U.S. 44, 61-62 (1987); *see infra* notes 85 to 95 and accompanying text.

24. *Zayas*, 546 N.E.2d at 516.

25. *Id.* at 518. The *Zayas* court wrote that it is not "imperative" that the critics of hyp-

mony to support its ruling. Despite the fact that the trial judge emphasized that he found no "suggestion" given to the hypnotized police officer and further found that his hypnotically refreshed memory was corroborated by other evidence, the Illinois Supreme Court made a wholesale rejection of *any* such testimony, without regard for its reliability in a specific instance. The Texas Court of Criminal Appeals, on the other hand, when faced with precisely the same issue,[26] eschewed a per se rule excluding testimony based on hypnotically enhanced memory and focused upon the testimony's reliability in a particular case.

Some of these inconsistent rulings on expert testimony may be explained by a continuing battle between use of the strict *Frye* standard of "general scientific acceptance"[27] and the more liberal McCormick "general relevancy"[28] approach. This debate has been well-cata-

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nosis are correct in their concerns that hypnotically refreshed memory may be inaccurate. Instead, "what is important is that many doubt its accuracy in restoring memory." As Professor Imwinkelried has noted, even a Nobel prizewinner who had conducted a thorough, well-designed experiment to test a novel scientific theory would be prevented from testifying to his results under the *Frye* test if this theory was not already generally accepted in the specific scientific field. Imwinkelried, *The Standard for Admitting Scientific Evidence: A Critique From the Perspective of Juror Psychology*, 28 VILL. L. REV. 554, 557 (1982-1983).

26. Zani v. State, 758 S.W.2d 233 (Tex. Crim. App. 1988). *See infra* note 95.

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

28. C. MCCORMICK, HANDBOOK ON THE LAW OF EVIDENCE § 203 at 491 (2d ed. 1972). In criticizing the *Frye* standard and setting forth his own approach, Professor McCormick stated:

> "General scientific acceptance" is a proper condition for taking judicial notice of scientific facts, but not a criterion for the admissibility of scientific evidence. Any relevant conclusions which are supported by a qualified expert witness should be received unless there are other reasons for exclusion. Particularly, probative value may be overborne by the familiar dangers of prejudicing or misleading the jury . . . . If the courts used this approach, instead of repeating a supposed requirement of "general acceptance" not elsewhere imposed, they would arrive at a practical way of utilizing the results of scientific advances.

Id. The McCormick approach does not dispense entirely with the inquiry into general scientific acceptance since "[a] technique unable to garner *any* support, or only minuscule support, within the scientific community, would be found unreliable by a court." United States v. Williams, 583 F.2d 1194, 1198 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979). Rather, this approach treats widespread acceptance of the theory or technique as simply one factor to consider. The major drawback with the McCormick relevancy approach is that it is not selective enough. As Professor Lederer has noted: "This test is conducive to admission of novel scientific evidence. However, it presents a significant theoretical risk that unreliable evidence could be admitted because of the meager demands of logical relevancy." *Rules for Admissibility of Scientific Evidence*, 115 F.R.D. 79, 86 (1987) (Lederer's proposal).

logued elsewhere.[29] While each of these standards addresses important evidentiary concerns, neither works well for all types of expertise or in all contexts. Both have led courts to employ per se rules of exclusion or admission of expert testimony without sufficient regard to the necessity of expert testimony in the specific case.

When an expert is the source of evidence on specific facts at issue in a criminal case, his testimony may be highly probative, but it also carries the potential for unfair prejudice. If the expert testimony is incomplete or inaccurate, the very facts upon which a jury decides guilt or innocence may be unreliable and increase the risk of an erroneous verdict.[30] Thus, the expert, who is the source of specific factual

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29. The suitability of the McCormick approach over the *Frye* test has been the subject of great debate in both the judicial and scholarly community. *See, e.g.*, D. LOUISELL & C. MUELLER, FEDERAL EVIDENCE § 382, at 643-44 (1979); 2 S. SALTZBURG & K. REDDEN, FEDERAL RULES OF EVIDENCE MANUAL 633 (4th ed. 1986); 3 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE ¶ 702[03] (1988); Doyle, *Applying Lawyers' Expertise to Scientific Experts: Some Thoughts About Trial Court Analysis of the Prejudicial Effects of Admitting and Excluding Expert Scientific Testimony*, 25 WM. & MARY L. REV. 619, 630-35 (1984); Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, A Half-Century Later*, 80 COLUM. L. REV. 1197 (1980); Graham, *Relevancy and the Exclusion of Relevant Evidence: Admissibility of Evidence of a Scientific Principle or Technique—Application of the* Frye *Test*, 19 CRIM. L. BULL. 51 (1983); Imwinkelried, *Judge Versus Jury: Who Should Decide Questions of Preliminary Facts Conditioning the Admissibility of Scientific Evidence?*, 25 WM. & MARY L. REV. 577 (1984)[hereinafter cited as Imwinkelried, *Judge Versus Jury*]; Imwinkelried, *The Standard For Admitting Scientific Evidence: A Critique from the Perspective of Juror Psychology*, 28 VILL. L. REV. 554 (1982-1983); Moenssens, *supra* note 8 at 546. Some courts reject *Frye* and adopt a general relevancy approach. United States v. Downing, 753 F.2d 1224, 1232-37 (3d Cir. 1985); State v. Hall, 297 N.W. 2d 80, 84-85 (Iowa 1980). In *Hall*, the Iowa Supreme Court rejected *Frye*, writing that:

> 1) such a rule imposes a standard for admissibility not required of other areas of expert testimony . . .; 2) it is inconsistent with modern concepts of evidence . . .; 3) [d]espite its apparent simplicity, distinguishing "scientific" evidence from other areas of expert testimony is a difficult determination in many instances . . .; 4) acceptance in the scientific community is a nebulous concept . . . .

Hall, 297 N.W.2d at 84-85.

Legal scholars have met and attempted to find an alternative to *Frye*, but so far have been unsuccessful. *See Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 230-31 (1983); *Rules for Admissibility of Scientific Evidence*, 115 F.R.D. 79, 102 (1987) (Giannelli's proposal).

By 1984, fifteen states and two federal circuits had explicitly rejected or questioned the precedential value of the *Frye* test under their codified rules of evidence. *See* Imwinkelried, *Judge Versus Jury*, at 578.

30. *See* United States v. Downing, 753 F.2d 1224, 1241 (3rd. Cir. 1985). The court pointed out that while favoring admissibility of expert evidence under rule 702, "some caution is appropriate, especially in the criminal context, whenever proffered novel scientific evidence, if unreliable or likely to mislead, will increase the likelihood of an erroneous verdict." *Id.*

information and conclusions based upon his own findings and interpretation of these findings, is a potent force in the courtroom. It is this type of expert testimony which must be carefully scrutinized to ensure that the underlying facts, data, and opinion are sufficiently reliable to support the verdict in a criminal trial.

To meet this concern, the original *Frye* test was created.[31] In *Frye*, the defendant, on trial for murder, attempted to introduce expert testimony that he had "passed" a "systolic blood pressure deception test," a forerunner of the current polygraph test.[32] The expert would have testified to the theory of the technique, the instrument, the testing procedure, the data obtained, and his professional opinion regarding the significance of that data.[33] The testimony was rejected by both the trial and appellate courts as scientifically unreliable because the test was not generally accepted by physiological and psychological authorities.[34]

The *Frye* test, despite its manifold faults,[35] does address legitimate concerns: a concern for the reliability of scientific evidence offered in a criminal trial; a concern for uniformity of judicial decision; a concern for the wastefulness of repeated hearings on the validity of scientific techniques; and a concern that at least a "minimal reserve" of experts be available to evaluate a novel technique's use.[36] The *Frye* "general acceptance" test, to the extent it was religiously followed, did indeed meet these concerns by excluding virtually all novel scientific evidence.[37] In addressing the admissibility of novel scientific evidence under *Frye*, "the issue is consensus versus controversy over a particular technique, not its validity," and "the focus is primarily on counting scientists' votes rather than verifying the soundness of a scientific

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

32. *Id.*

33. *Id.*

34. *Id.*

35. *See* Moenssens, *supra* note 8, at 547-59 (noting difficulties of deciding when *Frye* applies, to what field a scientific technique belongs, whether validation is required by disinterested scientists, and how "general" acceptance must be); P. GIANNELLI & E. IMWINKELRIED, SCIENTIFIC EVIDENCE 19 (1986) (citing confusion as to what *Frye* standard requires). "[A]though a number of cases refer to general acceptance of the 'procedure,' 'technology,' or 'scientific technique,' some commentators and courts appear to require that the underlying theory also be generally accepted". *Id.*

36. *See* Giannelli, *supra* note 29, at 1207; Moenssens, *supra* note 8, at 546-50.

37. *See, e.g.*, United States v. Sample, 378 F. Supp. 44, 53 (E.D. Pa. 1974) (general admissibility rule for opinion evidence applied because *Frye* "precludes too much relevant evidence").

conclusion."[38] Admissibility of expert evidence became explicitly or implicitly linked to a scientific "popularity poll" rather than scientific reliability of the specific evidence offered in the particular case.

Although the *Frye* test prevented juries from hearing or using accurate information in evolving fields of science,[39] as a practical matter, it was followed only sporadically.[40] Indeed, some courts have

38. Jones v. United States, 548 A.2d 35, 42-43 (D.C. App. 1988) (EMIT drug tests met *Frye* consensus standard).

39. *See* United States v. Williams, 583 F.2d 1194, 1197 n.4 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979) (admissibility must be decided after considering current state of evolving scientific field). In *Williams*, the Second Circuit admonished the *Frye* standard stating that: "In testing for admissibility of a particular type of scientific evidence, whatever the scientific 'voting' pattern may be, the courts cannot in any event surrender to scientists the responsibility for determining the reliability of that evidence." *Id.* at 1198; *see also* State v. Bullard, 322 S.E.2d 370, 380 (N.C. 1984) (footprint identification technique testimony properly admitted although novel).

40. United States v. Piccinonna, 885 F.2d 1529, 1531 (11th Cir. 1989) (*Frye* standard usually invoked sporadically, however, consistently applied to admissibility of polygraph evidence). *See* Giannelli, *supra* note 29, at 1228-31 (because of adoption of federal rules of evidence and constitutional questions concerning criminal defendant's right to present defense, "more courts will consider jettisoning the *Frye* standard"). Some of the problems which developed under the *Frye* test were:

1) What is the appropriate field or scientific community in which the expertise must have achieved general acceptance? For example, in *People v. Williams*, the court, in addressing the admissibility of a naline test for narcotics, had to decide whether the appropriate scientific field was the entire medical community, most of which had never heard of a naline test, or simply "those who would be expected to be familiar with its use," presumably those who used the test. 331 P.2d 251, 253-54 (Cal. App. Dep't Super. Ct. 1958). Obviously, those who used this test would consider it accurate. Thus, general acceptance can be determined by merely defining the appropriate field.
2) What does "generally accepted" within the appropriate field mean? If universal acceptance is the appropriate criterion, undoubtedly *no* scientific evidence could ever be admitted in any trial. If "generally accepted" means "some experts but not all," how many experts are enough? The only consensus that has been reached on this issue is that more than the single expert who developed the test must accept it. Giannelli, *supra* note 29, at 1211 n.91.
3) What was it that had to be generally accepted? The theory? The methodology? The instrument? The interpretation of the testing results? Once again, courts and commentators differed as to the relevant issue and once again admissibility of the expertise differed depending on how the issue was framed. Giannelli, *supra* note 29, at 1211-15.

For a general critique of the *Frye* test and its vague standard, see Jones v. State, 716 S.W.2d 142 (Tex. App.—Austin 1986, pet. ref'd) (expert testimony on gas chromatography mass spectrometry test results passed *Frye* general acceptance test though court urged adoption of general relevance analysis under state rules of evidence). For a case which limits the applicability of *Frye* to "scientific" mechanisms, instruments, or procedures, see People v. McDonald, 37 Cal. 3d 351, 208 Cal. Rptr. 236 (Cal. 1984). The court found that the *Frye* standard applies "primarily in cases involving novel devices or processes such as lie detectors, 'truth serum,' Naline testing, experimental systems of blood typing, 'voiceprints,' identification by human bite marks, microscopic analysis of gunshot residue, and hypnosis." *Id.* In *People v. Sanchez*,

even permitted polygraph evidence when the proponent has established that the evidence is sufficiently reliable as presented in that particular case.[41] Thus, while some jurisdictions have wholly abandoned the *Frye* standard and its legitimate concerns in favor of a more relaxed rule permitting probative expert testimony on all relevant issues,[42] other jurisdictions have adhered strictly to the *Frye* test in contexts well beyond its original setting.[43] A better view, however, is that courts should address the *Frye* test rationale to ascertain "the degree to which the trier of fact must accept, on faith, scientific hypotheses not capable of proof or disproof in court and not even gener-

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the court held that the *Frye* standard applied to the admission of expert testimony on child sexual abuse accommodation syndrome when it was offered to prove a child was abused. 256 Cal. Rptr. 446, 453-54 (Cal. App. 1989). However, the court also stated that *Frye* did not apply when that same testimony was offered to rehabilitate the credibility of a child victim after cross-examination. Given the artificial distinctions made by courts in the applicability of the *Frye* standard, it is not surprising that many commentators call for its abandonment.

41. United States v. Piccinonna, 885 F.2d 1529, 1536-37 (11th Cir. 1989) (no per se rule of exclusion of polygraph evidence when offered to impeach or rehabilitate testimony); United States v. Dietrich, 854 F.2d 1056, 1059 (7th Cir. 1988) (although often excluded, considerable deference afforded judge's decision concerning admissibility of polygraph evidence).

42. *See, e.g.*, United States v. Williams, 583 F.2d 1194, 1197-98 (2d Cir. 1978) (limiting *Frye* to "ascertainment of scientific principles" and rejecting any threshold requirement of general scientific acceptance), *cert denied*, 439 U.S. 1117 (1979); Whalen v. State, 434 A.2d 1346 (Del. 1980) (admitted under traditional relevancy principles); Coppolino v. State, 223 So. 2d 68, 69-71 (Fla. Dist. Ct. App. 1969), *appeal dism'd*, 234 So. 2d 120 (Fla. 1969), *cert. denied*, 399 U.S. 927 (1970); State v. Williams, 446 N.E.2d 444, 47-48 (Ohio 1983) (rejecting *Frye*; spectrographic voice analysis evidence admissible under relevancy standard of state rules of evidence); State v. Walstad, 351 N.W.2d 469, 486-87 (Wis. 1984) (rejecting *Frye* and applying relevancy standard). In *Coppolino*, the trial court admitted evidence on a testing procedure used to detect succinylcholine in a victim's body. *Coppolino*, 223 So. 2d at 69. Prior to the testing, medical scientists believed succinylcholine was impossible to detect. *Id.* at 70. The court held that the trial judge did not abuse his discretion in admitting the evidence. *Id.* at 71. The court also stated that although Florida had apparently adopted the "general acceptance" *Frye* standard, the judge did not abuse his discretion in finding that the tests were adequately reliable to admit. *Id.* at 70-71.

43. *See* United States v. Gillespie, 852 F.2d 475, 481 (9th Cir. 1988). In *Gillespie*, the circuit court applied the rigorous *Frye* standard and held it was error to admit the testimony of a child abuse therapist regarding a child's behavior with anatomically correct dolls. *Id.* Interpreting "child's play" would not seem to be the sort of scientific expertise that *Frye* was intended to address. *Id.* *Compare* Matter of Cheryl H., 153 Cal. App. 3d 1098, 1127, 200 Cal. Rptr. 789, 807-08 (Cal. Ct. App. 1984) (psychiatrist could testify to child's actions with anatomically correct dolls because relevant as basis of expert's opinion that father abused his child) *with In re* Amber B., 191 Cal. App. 3d 682, 236 Cal. Rptr. 623 (Cal. Ct. App. 1987) (reversible error because use of anatomically correct dolls was "new scientific method" without *Frye* test foundation).

ally accepted outside the courtroom."[44] It is this latter approach which shows greater sensitivity to the concerns that different types of novel expertise raise.

The types of novel expertise currently offered in courts run the gamut from the highly subjective, "soft" sciences of psychology and psychiatry[45] to the highly objective, "hard" sciences of microbiology, chemistry, and nuclear physics.[46] "Soft science" expertise includes evidence concerning psychological syndromes, reliability of eyewitness identification, hypnotically refreshed testimony, and behavioral science testimony such as "profile" experts on the "drug courier profile" and "Mafia capo profile," and the modus operandi of certain groups or businesses, such as the narcotics industry. In recent years, both prosecutors and defendants have offered expert testimony on a variety of psychological behavior patterns including "The Battered Woman Syndrome;"[47] "The Battered Child Syndrome;"[48] "The Bat-

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44. People v. Marx, 54 Cal. App. 3d 100, 110, 126 Cal. Rptr. 350, 355-56 (Cal. Ct. App. 1975) (declining to apply *Frye* test to bitemark comparison expertise).

45. *See* McCord, *Syndromes, Profiles and Other Mental Exotica: A New Approach to the Admissibility of Nontraditional Psychological Evidence in Criminal Cases*, 66 OR. L. REV. 19, 29 (1987) (characterizing social sciences as "soft" and physical sciences as "hard").

46. *See* Imwinkelried, *A New Era in the Evolution of Scientific Evidence—A Primer on Evaluating the Weight of Scientific Evidence*, 23 WM. & MARY L. REV. 261, 274-83 (1981). Professor Imwinkelried categorizes scientific evidence into three broad categories: (1) instrumental techniques that yield a precise, numerical result, e.g., gas chromatograph; (2) instrumental techniques that yield non-numerical visual displays which are subject to expert interpretation, e.g., polygraph, sound spectrograph; and (3) "soft," non-instrumental techniques which rely entirely upon the expert's evaluation, e.g., psychiatry. The jury is most impressed by the first category and least impressed by the last. *Id.* at 274, 283.

47. Some courts have held that expert testimony on the Battered Woman Syndrome is inadmissible to prove the defendant used self-defense. *See* People v. White, 414 N.E.2d 196, 200 (Ill. App. 1980) (not error to exclude physician's testimony discussing battered women who remain with mates); State v. Necaise, 466 So. 2d 660, 663-65 (La. App. 1985) (expert testimony on Battered Woman Syndrome inadmissible to prove defendant's state of mind at time she shot husband); State v. Thomas, 423 N.E.2d 137, 139-40 (Ohio 1981) (listing eight reasons to exclude testimony). However, most courts have permitted expert testimony on this syndrome when it was relevant to a disputed issue. *See* Ibn-Tamas v. United States, 407 A.2d 626, 631-39 (D.C. App. 1979); Hawthorne v. State, 408 So. 2d 801, 806-07 (Fla. App.), *petition denied*, 415 So. 2d 1361 (Fla. 1982); State v. Hundley, 693 P.2d 475, 479 (Kan. 1985); Commonwealth v. Rose, 725 S.W.2d 588, 590-91 (Ky.), *cert. denied*, 484 U.S. 838 (1987); State v. Anaya, 438 A.2d 892, 894 (Me. 1981); State v. Kelly, 478 A.2d 364, 369-83 (N.J. 1984); Fielder v. State, 756 S.W.2d 309, 320-21 (Tex. Crim. App. 1988); State v. Allery, 682 P.2d 312, 316 (Wash. 1984); State v. Steele, 359 S.E.2d 558, 563-65 (W. Va. 1987).

Expert evidence on the Battered Woman Syndrome has even been admissible in a rape prosecution to show the victim's state of mind. State v. Ciskie, 751 P.2d 1165, 1166-74 (Wash. 1988). In *Ciskie*, the defendant was charged with four counts of raping his girlfriend over a 23

tering Parent Syndrome;"[49] "The Child Sexual Abuse Syndrome;"[50]

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month period. *Id.* at 1166. The court found that the Battered Woman Syndrome testimony was helpful after an attack on the victim's credibility to explain why she failed to end the relationship or report the attacks to authorities. *Id.* at 1173. However, the court did not permit the psychologist to testify that the alleged victim was raped because that testimony could have been construed as a comment on the witness' credibility. *Id.* at 1174. *See generally* L. WALKER, THE BATTERED WOMAN SYNDROME (1984); L. WALKER, THE BATTERED WOMAN (1979); Mather, *The Skeleton in the Closet: The Battered Woman Syndrome, Self-Defense, and Expert Testimony*, 39 MERCER L. REV. 545 (1988); Comment, *Battered Woman Syndrome Testimony and the Jury: The Question of Admissibility*, 32 N.Y. L. SCH. L. REV. 79 (1987); Comment, *The Admissibility of Expert Testimony on Battered Wife Syndrome: An Evidentiary Analysis*, 77 NW. U.L. REV. 348 (1982); Comment, *The Battered Wife's Dilemma: To Kill or To Be Killed*, 32 HASTINGS L.J. 895 (1981); Comment, *The Expert as Educator: A Proposed Approach to the Use of Battered Woman Syndrome Expert Testimony*, 35 VAND. L. REV. 741 (1982); Comment, *A Trend Emerges: A State Survey on the Admissibility of Expert Testimony Concerning the Battered Woman Syndrome*, 25 J. FAM. L. 373 (1987).

48. *See, e.g.*, People v. Jackson, 95 Cal. Rptr. 919, 921 (Cal. Ct. App. 1971) (admissible because based upon extensive study, logic, and reason, although scientific uncertainty surrounding "probability" of diagnosis); State v. Dumlao, 491 A.2d 404, 409-10 (Conn. App. 1985) (helpful to show injuries intentionally inflicted by child's regular caretaker); State v. Wilkerson, 247 S.E.2d 905, 911-12 (N.C. 1978) (admissible because opinion based upon local expertise and medical literature); State v. Tanner, 675 P.2d 539, 541-45 (Utah 1983) (admissible to show absence of accident); State v. Mulder, 629 P.2d 462, 463 (Wash. Ct. App. 1981) (collecting decisions in which testimony held admissible). *See generally* McCoid, *The Battered Child and Other Assaults Upon the Family: Part One*, 50 MINN. L. REV. 1 (1965); Comment, *Admissibility of Expert Testimony on the Psychology of the Battered Child*, 11 LAW & PSYCH. REV. 103 (1987).

49. *See* State v. Conlogue, 474 A.2d 167, 172-73 (Me. 1984) (error in aggravated assault case to exclude expert testimony regarding how battered child becomes a battering parent when evidence pointed to State's witness as abuser). *But see, e.g., id.* at 174-76 (Scolnik, J., dissenting) (expert evidence of abusive parent characteristics impermissible "profile" or character evidence); Sloan v. State, 522 A.2d 1364, 1367-68 (Md. App.) (expert testimony on classic indicators of child abusers error because lack probative value and invited conviction on basis of propensity evidence), *cert. denied*, 528 A.2d 1287 (Md. 1987); State v.Loebach 310 N.W.2d 58, 62-64 (Minn. 1981) (expert testimony on battering parent syndrome inadmissible unless defendant first raised character issue); State v. Steward, 660 P.2d 278, 280 (Wash. Ct. App. 1983) (reversible error for pathologist to testify that 'babysitting boyfriends' often are child abusers). *See generally* Bulleit, *The Battering Parent Syndrome: Inexpert Testimony as Character Evidence*, 17 U. MICH. J. L. REF. 653 (1984).

50. *See, e.g.*, State v. Moran, 728 P.2d 248, 250 (Ariz. 1986) (citing numerous cases on admissibility in permitting expert testimony on general behavioral characteristics while testimony particularized on alleged victim's credibility inadmissible); *In re* Cheryl H., 200 Cal. Rptr. 789, 800-01 (Cal. Ct. 1984) (testimony on significance of three year old child's play with anatomically correct dolls as indicative of sexual abuse helpful to jury); State v. Kim, 645 P.2d 1330, 1335-39 (Haw. 1982) (testimony of specific characteristics of sexually abused children admissible since "comprehensible" and reliable); State v. Middleton, 657 P.2d 1215, 1217-20 (Or. 1983) (expert may not testify to credibility of victim, but may testify whether victim reacted typically when making prior inconsistent statement); Kirkpatrick v. State, 747 S.W.2d 833, 835-36 (Tex. App.—Dallas 1987, pet. ref'd) (testimony on general class characteristics victim admissible; particularized testimony regarding abuse and credibility reversible error);

"The Rape Trauma Syndrome;"[51] "The Viet Nam Post-Traumatic Stress Syndrome;"[52] "The Pre-Menstrual Stress Syndrome;"[53] "The

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State v. Rimmasch, 775 P.2d 388, 391-407 (Utah 1989) (discussion of criteria in addressing admissibility and form of expert testimony). *See generally* McCord, *Expert Psychological Testimony About Child Complainants in Sexual Abuse Prosecutions: A Foray Into the Admissibility of Novel Psychological Evidence*, 77 J. CRIM. L. & CRIMINOLOGY 1 (1986); Comment, *The Admissibility of Expert Testimony in Intrafamily Child Sexual Abuse Cases*, 34 UCLA L. REV. 175 (1986); Note, *The Unreliability of Expert Testimony on the Typical Characteristics of Sexual Abuse Victims*, 74 GEO. L.J. 429 (1985).

51. *See, e.g.*, People v. Hampton, 746 P.2d 947, 952-53 (Colo. 1987) (admissible when defense raised issue of victim's delay in reporting attack); State v. Gettier, 438 N.W.2d 1, 4-6 (Iowa 1989) (admitting generalized testimony on post-traumatic stress disorder in rape trial to show victim had been traumatized; citing numerous cases); People v. Reid, 475 N.Y.S.2d 741, 742-43 (1984) (admissible to explain victim's recantation since syndrome established by scientifically reliable studies); Commonwealth v. Gallagher, 547 A.2d 355, 357-58 (Pa. 1988) (inadmissible to explain victim's failure to identify defendant immediately after attack and identification four years later); State v. Black, 745 P.2d 12, 15-18 (Wash. 1987) (inadmissible since not established as scientifically reliable means of proving rape occurred). *See generally* Comment, *Expert Testimony on Rape Trauma Syndrome: Admissibility and Effective Use in Criminal Rape Prosecution*, 33 AM. U.L. REV. 417 (1984); Note, *The Unreliability of Expert Testimony on the Typical Characteristics of Sexual Abuse Victims*, 74 GEO. L.J. 429 (1985); Note, *"Rape Trauma Syndrome" and Inconsistent Rulings on its Admissibility Around the Nation: Should the Washington Supreme Court Reconsider Its Position in State v. Black?*, 24 WILLAMETTE L. REV. 1011 (1988).

In 1940, Texas may have been the first jurisdiction to admit evidence of rape trauma syndrome, although the evidence was not referred to in that manner. Clayton v. State, 139 Tex. Crim. 86, 138 S.W.2d 1084, 1086 (1940). In *Clayton*, the victim attempted suicide three days after being raped. Based upon a similar hypothetical, a doctor testified that the events would cause a sensitive woman to have suicidal emotions. He went on to testify that such conditions would create great mental emotion in a woman of the victim's temperament. *Id.* at 1086. The defendant objected that the doctor was not shown to have any experience with persons of that character and, thus, was no better qualified than the jury to determine the question. The court of criminal appeals rejected the defendant's position, stating that the objection went to the weight, not the admissibility, of the opinion. *Id.*

Expert testimony on "rape trauma syndrome" has also been held admissible on behalf of a defendant in a rape trial. Henson v. State, 535 N.E.2d 1189, 1194 (Ind. 1984). In *Henson*, the defendant called a psychologist who was an expert in post-traumatic stress syndrome. The trial court excluded the pyschologist's testimony concerning whether a raped person would return to the bar of the alleged attack on the same day, socialize, drink, and dance. *Id.* at 1191. The court found that this testimony should have been admitted since it tended to show the victim's behavior was inconsistent with the behavior pattern as 'rape trauma syndrome.' *Id.*

52. *See, e.g.*, United States v. Crosby, 713 F.2d 1066, 1076-77 (5th Cir.) (refusal to qualify counselor as expert witness in diagnosis of post-traumatic stress syndrome in Vietnam veterans not error), *cert. denied*, 464 U.S. 1001 (1983); State v. Felde, 422 So. 2d 370, 377-78 (La. 1982) (reviewing expert testimony of post-traumatic stress disorder in Vietnam veteran admitted in capital murder trial); Miller v. State, 338 N.W.2d 673, 678 (S.D. 1983) (failure to raise "Vietnam stress syndrome" defense was not ineffective assistance of counsel). *See generally* Wilson & Zigelbaum, *The Vietnam Veteran on Trial: The Relation of Post-Traumatic Stress Disorder to*

Pathological Gambler's Syndrome;"[54] "The Holocaust Syndrome;"[55] "The Power Rapist Syndrome;"[56] and "The Captivity Syndrome."[57] The fields in which these experts specialize involve highly subjective findings and results, in which there is a wide range of possible interpretation and opinion. These sciences are "inexact."

For example, two highly trained psychologists might each examine the same person by giving a battery of psychological tests, conducting extensive interviews, and studing his background, behavior, and associates, and still come to totally different conclusions regarding his mental competence. Each psychologist may have used the same methodology which was generally accepted within their professional community. Yet the results might vary widely depending upon the professional's subjective interpretation. There will probably never be a day in which all psychiatrists or psychologists will reach the same result after analyzing the same patient. This does not mean that psychiatric or psychological evidence should never be allowed in a criminal trial. It does mean that the factfinder must be aware that results

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Criminal Behavior, 1 BEHAV. SCI. & L. 69 (1983); Note, *Post-Traumatic Stress Disorder—Opening Pandora's Box?*, 17 NEW ENG. L. REV. 91 (1981).

53. *See generally* Riley, *Premenstrual Syndrome as a Legal Defense*, 9 HAMLINE L. REV. 193 (1986).

54. *See* United States v. Gillis, 773 F.2d 549, 558 (4th Cir. 1985) (court could exclude testimony since no substantial acceptance in relevant discipline showing causal link between disorder and criminal behavior); United States v. Davis, 772 F.2d 1339, 1344 (7th Cir. 1985) (defendant's expert testimony properly excluded due to failure to explain connection between gambling compulsion and uncontrollable impulse to obtain money illegally), *cert denied*, 474 U.S. 1036 (1985); United States v. Gould, 741 F.2d 45, 48-52 & n.2 (4th Cir. 1984) (proper test is whether relevant discipline substantially accepts the general scientific hypothesis of causation; lower threshold may be acceptable when new scientific hypothesis is limited to consideration of item in chain of evidential proof); United States v. Lewellyn, 723 F.2d 615, 618 (8th Cir. 1983) (legally insufficient showing of insanity in embezzlement trial when expert could not demonstrate causal connection between disorder and commission of crime; expert opinions scientifically unreliable); State v. Lafferty, 456 A.2d 272, 272 (Conn. 1983) (defendant presented expert testimony on pathological gambling disorder in embezzlement trial, found not guilty by reason of insanity).

55. *See* Werner v. State, 711 S.W.2d 639, 642-46 (Tex. Crim. App. 1986) (not error to exclude expert testimony on Holocaust Syndrome when no connection established between syndrome and crime).

56. *See* Shaw v. State, 764 S.W.2d 815, 818-21 (Tex. App.—Fort Worth 1988, pet. ref'd) (expert improperly indicated rape occurred and defendant "fits the power rapist profile," but harmless error).

57. United States v. Hearst, 412 F. Supp. 889, 890-91 (N.D. Cal. 1976) (psychiatric testimony allowed to explain how prolonged incarceration, kidnapping, and physical and psychological abuse affected defendant's mental state since relevant to defense of coercion and duress), *aff'd*, 563 F.2d 1331 (9th Cir. 1977), *cert. denied*, 435 U.S. 1000 (1978).

in this field vary with the interpreter. Furthermore, this "soft science" expertise is less likely to overwhelm the common sense of the average juror than "hard science" expertise because it is closer to his common understanding and jurors usually recognize the subjectivity of the opinion.

At the other end of the spectrum is "hard science" expertise which, in theory at least, is wholly objective, totally replicable, and conclusive in its results.[58] These sciences are purportedly "exact." This type of expertise includes ballistics comparisons, fingerprint comparisons, drug analysis, and intoxilyzer test results.[59] Evidence of this sort, if believed by the trier of fact, conclusively resolves an issue in the case. For example, in the new field of genetic fingerprinting, every scientist who compares a DNA analysis of a blood specimen taken from a defendant and an unknown semen specimen found at a rape scene should be able to determine whether the unknown specimen is from the defendant.[60] If the test is properly performed, the results should not vary at all, no matter when the test is taken, how many times it is run, or which scientist runs it. The answer should be the same: "yes," "no," or "it is impossible to reach a conclusion from this specimen" in every case. Here, a high degree of scientific accuracy is essential because the result is accepted as conclusive. This evidence, being furthest from the juror's ability to test and validate himself, raises the greatest concern for reliability in criminal trials.

Somewhere between the two extremes of the highly subjective, "soft" sciences and the highly objective "hard" sciences lies the middle ground of expertise which should be, or purports to be, objectively reliable and conclusive but is not necessarily so. Included in this category are polygraph tests and voice spectrograms. Here, the expert purports to definitely determine whether a polygraph subject told the truth or whether an unknown voice matches that of the defendant's known voice. Yet professionals in these fields frequently disagree in

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58. *See infra* notes 176-79 and accompanying text.

59. For a general discussion on the scientific and evidentiary issues raised by such expert testimony, see P. GIANNELLI & E. IMWINKELRIED, SCIENTIFIC EVIDENCE 9 *passim* (1986).

60. For recent articles discussing the scientific basis and reliability of DNA testing, see Thompson & Ford, *DNA Typing: Acceptance and Weight of the New Genetic Identification Tests*, 75 VA. L. REV. 45 (1989); Williams, *DNA Fingerprinting: A Revolutionary Technique in Forensic Science and Its Probable Effects on Criminal Evidentiary Law*, 37 DRAKE L. REV. 1 (1987).

their interpretaions of the test results.[61] Thus, although the test data is scientifically replicable, the interpretation of the data varies. Here, expert testimony concerning results which appear to be conclusive and which, if believed by the factfinder, would resolve an issue at trial, may depend upon subjective interpretation. This type of testimony is particularly troublesome because it may convey a false aura of absolute scientific objectivity to the factfinder.

As an evidentiary sorting principle, courts cannot afford to use the same standards when addressing the admissibility of a psychologist's testimony regarding the general characteristics of a battered woman as they might use when addressing the admissibility of a molecular biologist's testimony on DNA "fingerprint" analysis to identify a rapist. If exactly the same criteria are used in both, courts will either admit too much unreliable scientific or semi-scientific evidence that appears to offer a conclusive result or refuse to admit enough general background information to help the jury understand and put in context the factual testimony they have heard. A new standard of admissibility is needed.

III. CONSTITUTIONAL CONSIDERATIONS

Before addressing the role of experts under the Federal Rules of Evidence, the constitutional limits that apply to the admission of expert testimony should be determined. As a general proposition, the present Supreme Court has been extraordinarily predisposed to admitting all relevant evidence without special regard for its scientific reliability. In several recent cases, most notably *Barefoot v. Estelle*,[62] *Delaware v. Fensterer*,[63] and *Rock v. Arkansas*,[64] the Court placed its faith in the adversarial method of cross-examination to expose any unreliable expert evidence rather than advocating or permitting per se rules of exclusion.

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61. *See, e.g.*, Gregory, *Voice Spectrography Evidence: Approaches to Admissibility*, 20 U. RICH. L. REV. 357, 373 (1986) (discussing subjectivity of voice identification process and criteria; advocating admission of such expertise under procedural safeguards unless particular prejudicial impact outweighs probative value); Raskin, *The Polygraph in 1986: Scientific, Professional and Legal Issues Surrounding Application and Acceptance of Polygraph Evidence*, 1986 UTAH L. REV. 29, 66-69 (suggesting poor training and incompetence of polygraph examiners only significant stumbling blocks to admissibility in criminal trials of otherwise accurate and reliable technique).

62. 463 U.S. 880 (1983).

63. 474 U.S. 15 (1985).

64. 483 U.S. 44 (1987).

Perhaps the most startling of these decisions is the 1983 *Barefoot v. Estelle*[65] case, in which a majority of the Court upheld the admission of testimony by Dr. James Grigson and Dr. John Holbrook. The doctors testified that, in their opinion, the defendant would continue to act violently and that he represented a threat to society.[66] The Supreme Court, though not relying on the rules of evidence, held that this expert testimony was not so unreliable as to undermine the factfinding process of deciding whether a capital murder defendant constituted a continuing danger to society.[67] The Court noted that:

> the rules of evidence generally extant at the federal and state levels anticipate that relevant, unprivileged evidence should be admitted and its weight left to the factfinder, who would have the benefit of cross-examination and contrary evidence by the opposing party. Psychiatric evidence predicting dangerousness may be countered not only as erroneous in a particular case but also generally so unreliable that it should be ignored. If the jury may make up its mind about future dangerousness unaided by psychiatric testimony, jurors should not be barred from hearing the views of the State's psychiatrists along with the opposing views of the defendant's doctors.[68]

The court acknowledged that other professionals, including members of the American Psychiatric Association, believed that psychiatrists and psychologists are wrong two out of three times when making predictions of violent behavior.[69] Nevertheless, the Court refused to bar the expert testimony on the basis of scientific unreliability and stated that:

> All of these professional doubts about the usefulness of psychiatric predictions can be called to the attention of the jury. Petitioner's entire argument . . . is founded on the premise that a jury will not be able to separate the wheat from the chaff. We do not share in this low evaluation of the adversary process.[70]

Justice Blackmun, joined by Justices Brennan and Marshall, dissented and emphasized the notion that "unreliable scientific evidence is widely acknowledged to be prejudicial."[71] Indeed, the majority and

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65. 463 U.S. 880 (1983).
66. *Id.* at 884.
67. *Id.* at 896-97.
68. *Id.* at 898-99.
69. *Id.* at 900 n.7.
70. *Id.* at 901 n.7.
71. *Id.* at 926 (Blackmun, J., dissenting). Justice Blackmun noted that "[t]he major dan-

dissenting opinions in the *Barefoot* case clearly set out the present debate between those who would admit relevant expert testimony without special concern for its scientific reliability and those who would exclude all scientific expertise which did not meet a high threshold of reliability within the pertinent scientific community. If the Supreme Court is willing to countenance expert testimony which the pertinent scientific community discounts as unreliable two-thirds of the time, it is difficult to imagine a situation in which the admission of psychiatric testimony would run afoul of the Constitution. It is not that such a cavalier attitude toward indiscriminate acceptance of scientifically unreliable testimony is advocated, but it is unlikely to be held unconstitutional.

Two years later, in the 1985 *Delaware v. Fensterer*[72] case, the Supreme Court held that the confrontation clause of the sixth amendment was not violated even though the state's expert witness could not remember the scientific method he used in forming his opinion.[73] This case involved a murder defendant whose conviction was based entirely on circumstantial evidence.[74] The state's theory was that Fensterer had strangled his fiancee with a cat leash.[75] Two of the dead woman's hairs were found on this leash.[76] The state called FBI Agent Robillard as an expert witness to prove that the victim's hair had been forcibly pulled out.[77] Robillard testified that he could no longer remember which of three possible scientific methods he had used to determine that the hair had indeed been forcibly removed.[78] The defendant objected that he could not cross-examine Robillard adequately if the witness did not know which scientific theory he had relied on.[79] This objection was overruled by the trial judge who stated that Robillard's uncertainty as to the method he employed "went to

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ger of scientific evidence is its potential to mislead the jury; an aura of scientific infallibility may shroud the evidence and thus lead the jury to accept it without critical scrutiny." *Id.* (quoting Giannelli, *supra* note 29 at 1237). Giannelli emphasized the danger of jurors abdicating their common sense to the perceived mystic infallibility of the unreliable expert, and suggested "that juries are not effective at assessing the validity of scientific evidence." *Id.* at 926 n.8, 929.

72. 474 U.S. 15 (1985).
73. *Id.* at 18.
74. *Id.* at 16.
75. *Id.*
76. *Id.*
77. *Id.*
78. *Id.* at 17.
79. *Id.*

the weight of the evidence rather than its admissibility."[80] The Supreme Court agreed, at least to the extent that the Constitution, rather than state rules of evidence, applied.[81] The Court noted that "[w]e need not decide whether the introduction of an expert opinion with no basis could ever be so lacking in reliability, and so prejudicial, as to deny a defendant a fair trial."[82] Here, since the defense had its own expert who vigorously disputed the validity of the FBI agent's scientific conclusion, there was no such denial.[83] Once again, the Supreme Court relied upon adversarial cross-examination to find the flaws in scientific expert testimony, rather than exclusion of the evidence.

Finally, in 1987, the Supreme Court held that a state evidentiary rule that prohibited the admission of a defendant's hypnotically refreshed testimony violated her constitutional right to testify on her own behalf.[84] In *Rock v. Arkansas*,[85] the defendant, Vicki Rock was convicted of the manslaughter killing of her husband.[86] When she could not remember the details of the shooting, her attorney suggested that she undergo hypnosis to refresh her memory.[87] She did so and was then able to recall that the gun had discharged when her husband grabbed her arm during a scuffle, but that she did not have her finger on the trigger.[88] Under Arkansas evidentiary rules, post-

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80. *Id.*

81. *Id.* at 22.

82. *Id.* at 22-23.

83. *Id.* at 23. On remand to the Supreme Court of Delaware, Fensterer's conviction was once more reversed. Fensterer v. State, 509 A.2d 1106, 1112 (Del. 1986). This time the state court held that Robillard's testimony was inadmissible under rule 705 of the Delaware Uniform Rules of Evidence. *Id.* at 1109. The Delaware Rule 705, varying from the analogous federal rule, requires that, before an expert may give his opinion, he must identify the basis and reasons for his opinion. *Id.* Thus, the court found that although Agent Robillard's inability to remember a particular fact only went to the weight of the evidence, his opinion was inadmissible under rule 705 because he failed to establish a sufficient basis for his opinion. *Id.* at 1109-10.

84. *See* Rock v. Arkansas, 483 U.S. 44, 62 (1987). The constitutional holding in *Rock* was presaged by at least two state court decisions. *See* State v. Dorsey, 532 P.2d 912, 914-15 (N.M. Ct. App. 1975) (due process requires polygraph test results may be admissible when defendant's credibility is crucial issue), *aff'd*, 539 P.2d 204 (N.M. 1975); State v. Sims, 369 N.E.2d 24, 46-47 (Ohio 1977) (although polygraph not perfected, due process requires admission).

85. *Id.* 483 U.S. 44 (1987).

86. *Id.* at 46.

87. *Id.*

88. *Id.* at 47.

hypnotic testimony was considered always unreliable and thus she was not permitted to testify to these details, even though many of them were corroborated by other evidence.[89] The Supreme Court noted that numerous states had adopted a per se rule against hypnotically refreshed testimony of any sort,[90] while others had adopted a per se rule in favor of admissibility,[91] and still others required an individual inquiry in each case.[92] The Court reviewed, with apparent approval, the various procedural guidelines that some states have adopted. The Court then reiterated the importance of accurately assessing testimony through traditional means, including corroboration through independent evidence, cross-examination, and presentation of opposing expert testimony to educate the jury on the uncertainties of hypnosis.[93] While acknowledging that hypnosis is a controversial and often scientifically unreliable investigatory tool, the Supreme Court held that "[a] State's legitimate interest in barring unreliable evidence does not extend to *per se* exclusions that may be reliable in an individual case."[94] Although the Court spoke solely of a defendant's right to present testimony, presumably this same rule would apply to the prosecution because the reliability of evidence does not depend upon the sponsoring party's identity.[95]

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89. *Id.* at 56-57.

90. *Id.* at 57 n.14.

91. *Id.* at 58 n.16.

92. *Id.*

93. *Id.* at 60-61.

94. *Id.* at 61.

95. The Texas Court of Criminal Appeals employed this "sauce for the goose is sauce for the gander" rationale when it applied the *Rock v. Arkansas* holding to hypnotically refreshed testimony offered by the prosecution. Zani v. State, 758 S.W.2d 233, 242 (Tex. Crim. App. 1988). In *Zani*, the defendant was tried in 1981 for the 1967 murder of a convenience store attendant. *Id.* Numerous pieces of circumstantial evidence pointed toward the defendant. However, the only eyewitness, Jerry Magoyne, Jr., could not describe the murderer except as "a white male," until he was hypnotized in 1980. After the hypnosis session, Magoyne positively identified the defendant as the murderer from a photo spread. *Id.*

The trial judge conducted a pretrial hearing to determine whether Magoyne's identification was admissible. *Id.* at 235. The State's expert, James Michael Boulch, a hypnosis teacher at Texas A&M University, testified that hypnosis could restore a person's memory and that "[i]nformation gained under hypnosis has proven to be very reliable." *Id.* at 236. Mr. Boulch acknowledged that one can lie under hypnosis and therefore, much care should be taken to be sure suggestions do not lead the person into giving false information. *Id.* Mr. Boulch was present during Mr. Magoyne's hypnotic session and stated that the hypnotist did not make suggestions or leading comments. *Id.* The defendant's expert, a clinical psychologist and FBI consultant, testified that, both as a general proposition and in this particular case, hypnotically enhanced memory is " 'probably scientifically unreliable and should not go to the jury.' " *Id.*

Along with the Supreme Court's liberality in admitting relevant expert evidence is its commitment to maintaining fair access to expertise. Indeed, one historical rationale for excluding expert evidence is that the state, with its financial and institutional resources, has an unfair advantage over the often indigent defendant in presenting qualified expert testimony.[96] In *Ake v. Oklahoma*,[97] the Supreme Court

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(quoting trial record). Nonetheless, the trial judge allowed Mr. Magoyne's identification and both experts presented the pros and cons of hypnotically refreshed memory. *Id.* at 236-37.

The court of criminal appeals reviewed the pertinent scientific literature, legal scholarship, and judicial precedent regarding hypnotically refreshed memory and concluded that it would have adopted a "a rule of *per se* exclusion of any evidence not documented or otherwise memorialized as the product of prehypnotic memory" under the *Frye* standard of scientific reliability. *Id.* at 242-43. However, the Supreme Court opinion in *Rock* made "such a position untenable." *Id.* at 243. The Texas court noted that although the Supreme Court did not address whether a per se rule of exclusion applied to hypnotically refreshed testimony when offered by the prosecution, it was "unwilling to impose such a rule of exclusion unilaterally against the State." *Id.*

> For if safeguards, corroboration and traditional means of testing believability of eyewitness testimony are deemed sufficient tests of reliability to require admission of hypnotically refreshed testimony on behalf of the accused in certain cases, they must also be considered sufficient gauges of reliability to permit admission of such testimony when proffered by the State in certain others.

Id. at 243. Thus, the Texas court seemed to adopt an evidentiary principle that reliability of the proffered expertise does not depend upon the identity of the offering party. Further, the court, perhaps unwillingly, eschewed a per se rule of exclusion of novel scientific expertise in favor of a rule which examined the reliability of the evidence in the specific instance. *Id.* Thus, a trial judge should admit testimony after considering the totality of the circumstances, if he finds by clear and convincing evidence that the witness' posthypnotic memory was trustworthy and subject to cross examination. *Id.* at 244.

Although Texas Rule of Criminal Evidence 702 was promulgated after *Zani* it mandates the same analysis. Unfortunately, however, the court apparently adopted a threshold of "clear and convincing evidence" although Texas Rule of Criminal Evidence 104(a), following its federal counterpart, only requires a preponderance of the evidence. *See infra* notes 241-57.

For a post-*Rock* case maintaining a per se rule against the admissibility of hypnotically refreshed testimony when offered by the prosecution, see Stokes v. State, 548 So. 2d 188, 194-95 (Fla. 1989) (balancing approach too time consuming and difficult to apply, *Frye* test appropriate). In *Stokes*, the sole rationale for maintaining a per se rule of exclusion was the significant amount of judicial time and effort necessary to make a careful decision. *Id.* While such an argument might justify a trial judge's decision to exclude evidence, surely this "judicial efficiency" argument ought not be the basis for reversing a trial judge who has already taken the time and effort in deciding to admit the evidence. In *Stokes*, not only did the trial judge spend the time and resources to make a balanced decision, the price for having wasted his time originally is to waste it once more by retrying the entire capital murder case. Such a result is hardly an efficient allocation of judicial resources.

96. *See, e.g.*, State v. Ogle, 668 S.W.2d 138, 142 (Mo. App. 1984). In *Ogle*, the Missouri Court of Appeals noted:

> we recognize that when there is expert testimony seemingly well qualified experts often reach conflicting results and that observers may be justified in feeling that experts often

held that due process requires that an indigent defendant be provided a court-appointed expert psychiatrist to prepare an effective defense when his sanity is seriously in question.[98] The Supreme Court noted the "pivotal role that psychiatry has come to play in criminal proceedings."[99] Accordingly, mental health experts, through their professional process of investigation, interpretation, and testimony, are ideally suited to assist lay jurors who generally have no training in psychiatric matters.[100] However, psychiatry is not an exact science and psychiatrists frequently disagree widely on the proper methodology and diagnosis. Therefore, the Court reasoned, opposing experts for each side would enable the jury to determine the truth most accurately.[101] Although *Ake's* holding is limited to a defendant's right to develop an insanity defense to a murder charge through a court-appointed psychiatrist, this same rationale should apply to other areas of expertise.[102]

While the Supreme Court has displayed a willingnesss to admit relevant expert testimony, it has also refused to address the conflict between the circuit courts concerning whether the *Frye* test survived the

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slant their testimony in favor of the party who employs them. When that occurs, a party with substantial funds available to hire experts may have a distinct advantage by being able to hire multiple and more expensive and presumably better qualified experts. Allowing expert testimony without restriction could lead to the "battle of experts that would invade the jury's province of factfinding and add confusion rather than clarity. . . ."

Id. (quoting Saldana v. State, 324 N.W.2d 227, 230 (Minn. 1982)); *see also* Reilly v. Berry, 166 N.E. 165, 167 (N.Y. 1929). Chief Justice Cardozo stated: "[U]pon the trial of certain issues, such as insanity or forgery, experts are often necessary both for prosecution and for defense. . . . [A] defendant may be at an unfair disadvantage, if he is unable because of poverty to parry by his own witnesses the thrusts of those against him." *Id.*

97. 470 U.S. 68 (1985).

98. *Id.* at 83.

99. *Id.* at 80-81.

100. *Id.*

101. *Id.* at 81.

102. Even before *Ake* was decided, the Fifth Circuit had ruled that "where the government's case rests heavily on a theory most completely addressed to expert testimony, an indigent defendant must be afforded the opportunity to prepare and present his defense to such a theory with the assistance of his own expert. . . ." United States v. Patterson, 724 F.2d 1128, 1130 (5th Cir. 1984) (defendant charged with bank robbery entitled to appointment of fingerprint expert since government's case revolved around fingerprint evidence); *see* Little v. Armontrout, 835 F.2d 1240, 1243 (8th Cir. 1987) (indigent defendant entitled to state-provided expert on hypnosis when rape victim identified defendant after hypnosis; citing rule in *Ake*). *See generally* P. GIANNELLI & E. IMWINKELRIED, *supra* note 35, § 4-3 at 134-36 (discussing ramifications of *Ake*).

1975 enactment of the Federal Rules of Evidence.[103]

In sum, the Supreme Court has placed great faith in the adversarial cross-examination process and the presentation of opposing expert testimony to assist the jury in reaching an accurate and well-informed decision concerning the reliability of expert testimony. Thus, it is unlikely that expert testimony admitted under even the most liberal interpretation of Federal Rule of Evidence 702 will run afoul of the federal Constitution. As one state court judge has noted: "The broad message I receive from *Rock* is that we should not adopt per se rules of exclusion at the beginning of an evolving medical practice, i.e., hypnosis as a tool for memory recall."[104] Thus, courts that continue to use per se rules of exclusion for novel scientific expertise not only deny jurors relevant probative evidence, but risk reversal under Supreme Court mandate.[105]

IV. THE GENERAL MANDATE OF RULE 702

The text of rule 702 is vague and liberal. It reads:

> 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.[106]

The key to the rule is whether the expertise "will assist" the factfinder. Rule 702 thus sets a minimal standard of "helpfulness"[107]

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103. *See* Mustafa v. United States, 479 U.S. 953, 953 (1986) (White, J., dissenting to denial of certiorari) (noting split between federal circuits on whether rule 702 establishes more flexible standard of admissibility than *Frye* test).

104. Morgan v. State, 537 So. 2d 973, 977 (Fla. 1989) (Shaw, J., concurring) (approving reliable and relevant expert medical testimony based on information obtained from defendant by hypnosis).

105. *Id.*

106. FED. R. EVID. 702.

107. *See* FED. R. EVID. 702, advisory committee note. The advisory committee note states:

> Whether the situation is a proper one for the use of expert testimony is to be determined on the basis of assisting the trier. "There is no more certain test for determining when experts may be used than the common sense inquiry whether the untrained layman would be qualified to determine intelligently and to the best possible degree the particular issue without enlightenment from those having a specialized understanding of the subject involved in the dispute." When opinions are excluded, it is because they are unhelpful and therefore superfluous and a waste of time.

Id. (citations omitted); *see* Zenith Radio Corp. v. Matsushita Elec. Indus. Co., 505 F. Supp.

and adopts Professor Wigmore's threshold question of: "On *this subject* can a jury from *this person* receive appreciable help?"[108] This is a significant change from the common law standard in which the proffered expertise was admissible only if it was "beyond the comprehension of the average juror."[109] This is a very generous standard and follows the general framework of the federal rules which favors the admissibility of all relevant evidence.[110]

Under rule 702, an expert's testimony might assist the trier of fact in either of two distinct ways: "to understand the evidence" that has already been admitted through some other witness,[111] or "to deter-

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1313, 1330 (E.D. Pa. 1980); *see also* 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[02]. Professor Ladd's above-quoted language, "to the best possible degree," is the key to appreciating the helpfulness standard of rule 702. An expert might even "assist" a trier of fact who already has considerable knowledge in a particular area if his expertise adds just a "brick" to the wall of complete comprehension. *See* C. MCCORMICK, *supra* note 28, § 185 at 436.

108. 7 J. WIGMORE, EVIDENCE § 1923 (Chadbourn rev. 1978). Some courts, using the Federal Rules of Evidence, have gone so far as to hold that the admissibility of expert testimony turns on whether the experts have peculiar knowledge or experience which assist the court or jury in deciding an issue. State v. Odom, 560 A.2d 1198, 1201 (N.J. 1989); State v. Stringer, 639 P.2d 1264, 1266 (Or. 1982).

109. 2 S. SALTZBURG & K. REDDEN, *supra* note 29, at 631. Under strict common law standards of admissibility, expert testimony was frequently excluded under the rubric of not being "beyond the ken" of the jury. *See* Fineberg v. United States, 393 F.2d 417, 421 (9th Cir. 1968); 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[02] (before Federal Rules enacted expert testimony not needed unless outside common knowledge of layman).

110. *See In re* Japanese Elec. Prod. Antitrust Litig., 723 F.2d 238, 278-79 (3d Cir. 1983) (judicial discretion exercised with presumption that testimony helpful); *see also* United States v. Downing, 753 F.2d at 1229, 1232 (Rule 702 usually favors admissibility, thus testimony on eyewitness perception sometimes meets helpfulness standard of Rule 702); United States v. Barker, 553 F.2d 1013, 1024 (6th Cir. 1977) (noting change from common law requirement that testimony admitted only when factual issues could not be determined without technical assistance to liberal admissibility under rule 702). *But see* United States v. Fosher, 590 F.2d 381, 383 (1st Cir. 1979) (testimony on general problems of eyewitness identification not "sufficiently beyond the ken of lay jurors to satisfy Rule 702"). As Judge Weinstein notes in his treatise with regard to rule 702:

> Because of the Federal Rules' emphasis on liberalizing expert testimony, doubts about whether an expert's testimony will be useful should generally be resolved in favor of admissibility unless there are strong factors such as time or surprise favoring exclusion. The jury is intelligent enough, aided by counsel, to ignore what is unhelpful in its deliberations.

3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[02], at 702-30 (footnotes omitted).

111. For example, in a prosecution for possession of controlled substances with intent to distribute, one witness might testify to the historical fact that a specific defendant had possessed a given quantity of drugs that were packaged in a particular manner. Another witness, one qualified as an expert in narcotics, might then testify as to the general manner of packaging and processing drugs for use or distribution, the significance within the drug industry of various quantities and concentrations of narcotics, the use of various drug paraphernalia, and the

mine a fact in issue."[112] The first type of expert is an educator, while the second provides and evaluates data.

The function of the educating expert witness is to teach the jury about an area of science, technology, or other specialized knowledge with which the jury may either have a superficial understanding[113] or

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characteristics of the drugs themselves. Since the average juror is not familiar with the illegal drug industry, this expert testimony would help the jury understand the significance of finding a large quantity of drugs in the possession of a single person. Thus, the expert is not providing *new* evidence of an historical fact, but shedding new light and understanding upon evidence which had already been admitted. *See* State v. Odom, 560 A.2d 1198, 1201-04 (N.J. 1989) (expert's specialized knowledge helpful to understand purpose and intent of unlawful drug possession); *see also* Pike v. State, 758 S.W.2d 357, 364 (Tex. App.—Waco 1988), *vacated*, 772 S.W.2d 130 (Tex. Crim. App. 1989) (expert in operations of narcotics laboratories could testify to manufacturing, marketing, and distribution costs of narcotics to assist jury's understanding of subsequent evidence); Morrow v. State, 757 S.W.2d 484, 487-88 (Tex. App.—Houston [1st Dist.] 1988, pet. ref'd) (police expert may testify to quantity of drugs sold as consumer item, drug price, and packaging to prove defendant possessed drugs with intent to deliver).

112. For example, in a rape case, a qualified expert's testimony on DNA results used to identify the attacker helps determine a fact issue. *See* Andrews v. State, 533 So. 2d 841, 850-51 (Fla. Dist. Ct. App. 1988). In this situation expert testimony is not a comment upon the significance or context of other evidence; rather, it is proof of a material fact.

113. The "will assist" standard of rule 702 permits the use of expert testimony whenever the expert would shed further light upon a subject which may be, in some respects, quite familiar to jurors. *See* D. LOUISELL & C. MUELLER, *supra* note 29, § 382, at 640. The question now is not whether the jurors know *something* about this area of expertise, but whether the expert can expand their understanding of this area in any way that is relevant to the disputed issues in this trial. As was noted by one court with regard to the fallibility of eyewitness identification:

> It is doubtless true that from personal experience and intuition all jurors know that an eyewitness identification can be mistaken, and also know the more obvious factors that can affect its accuracy, such as lighting, distance and duration. It appears from the professional literature, however, that other factors bearing on eyewitness identification may be known only to some jurors, or may be imperfectly understood by many, or may be contrary to the intuitive beliefs of most.

People v. McDonald, 690 P.2d 709, 720 (Cal. 1984); *see also* United States v. Hill, 655 F.2d 512, 516 (3d Cir. 1981) (narcotic distribution conviction reversed; psychologist's testimony regarding unusual susceptibility of defendant to follow others' suggestions admissible as relevant to his entrapment defense), *cert. denied*, 464 U.S. 1039 (1984); State v. Rimmasch, 775 P.2d 388, 411 (Utah 1989) (Durham, J., concurring) (psychological or psychiatric evidence helps jurors use their knowledge and corrects erroneous presumptions).

In the area of child sexual abuse prosecutions, the courts frequently cite the educational function as a legitimate basis for expert testimony if it might assist the jury. State v. Jensen, 432 N.W.2d 913, 916 (Wis. 1988). The Supreme Court of Wisconsin explained that an expert can help a jury understand the significance of an abused child's abnormal behavior by explaining its significance and extreme deviation from ordinary children's behavior. *Id.* at 916 n.2.

The same "teaching function" rationale for admitting expert testimony is found in rape prosecutions to explain behavior patterns of rape victims under what has been labeled as "rape

some misconceptions.[114] Frequently, educational expert testimony is contrary to a jurors' common understanding. Here, the witness acts "as an advisor to the jury, much like a consultant might advise a business."[115] One commentator has suggested that educational expert testimony adds to a jury's understanding by "revelation, augmentation, and correction."[116] These experts frequently testify in the form of a mini-lecture concerning their general area of expertise.[117] The expert

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trauma syndrome." *See* People v. Reid, 475 N.Y.S.2d 741, 742 (1984) (reaction to rape not within juror's common knowledge); People v. Hampton, 746 P.2d 947, 949-52 (Colo. 1987) (expert testimony concerning rape victim's delay in reporting known attacker admissible); Massaro, *Experts, Psychology, Credibility and Rape: The Rape Trauma Syndrome Issue and Its Implications for Expert Psychological Testimony*, 69 MINN. L. REV. 395, 442 (1985) (discussing use of expert psychological testimony to explain existence and significance of psychological trauma on victim).

114. The expert frequently has a "myth-reducing" function. *See* State v. Jenson, 432 N.W.2d 913, 918 (Wis. 1988) (expert testimony on child sexual abuse prevents false assumptions). Although jurors may believe they have a good understanding of a particular area of knowledge, their understanding may be inaccurate or based on misperception. *See id.*; *see also* State v. Robinson, 431 N.W.2d 165, 172 (Wis. 1988). The court in *Robinson* stated that an expert could explain that sexual assault victims are commonly "emotionally flat" in response to the defendant's claim that such behavior was inconsistent with rape. *Id.* at 172. The court also noted that empirical data overwhelmingly refutes many beliefs commonly held concerning sexual assault victims. *Id.* at 172 n.7; *accord* State v. Moran, 728 P.2d 248, 254 (Ariz. 1986) (testimony on child sexual abuse admissible to provide explanation for victim's anger which defendant claimed was result of parental discipline). *But cf.* People v. Bledsoe, 681 P.2d 291, 301 (Cal. 1984) (expert evidence on rape trauma syndrome should not be admitted).

115. 2 S. SALTZBURG & K. REDDEN, *supra* note 29, at 632.

116. McCord, *supra* note 45, at 95. Professor McCord distinguishes the three terms as follows:

> "Revelation" refers to the situation where the expert testimony provides the jury with a way of looking at an issue that would not occur to the jury in the absence of the testimony. "Augmentation" is a related concept. It refers to the situation where the jury may recognize a way of looking at an issue, but due to rudimentary knowledge may be unable to utilize the insight to its fullest advantage. . . .
>
> "Correction" refers to the situation where a jury's thoughts about an issue are based upon common but incorrect perceptions.

Id. at 95-96 (footnotes omitted); *see also* State v. Rimmasch, 775 P.2d 388, 411 (Utah 1989) (Durham, J., concurring.).

117. In one Mafia-related trial, an FBI agent, testifying as an expert, was permitted to give an extensive historical description "of the nature and structure of organized crime families." United States v. Daly, 842 F.2d 1380, 1388 (2d Cir. 1988), *cert. denied*, 488 U.S. 821 (1988). As the Second Circuit court noted:

> There is no question that there was much that was outside the expectable realm of knowledge of the average juror. For example, [the FBI agent] identified the five organized crime families that operate in the New York area; he described their requirements for memberships, their rules of conduct and code of silence, and the meaning of certain jargon . . . and he described how, in general, organized crime has infiltrated labor unions.

Id. In *Daly*, the defendant claimed that the jury did not *need* any expert testimony in the area

has not necessarily talked with any of the witnesses, run any tests, or formed any conclusions regarding the facts concerning a particular trial. He is not there to give an opinion about a particular case, his sole function is to give the jury the benefit of his knowledge in a relevant area. With this additional information, the jury should be in a better position to interpret the evidence.[118]

The second type of expert witness, one who assists the jury in determining a fact in issue, provides new information as well as his expert opinion on the significance of that information in a particular lawsuit. Here, the expert does not merely put other witnesses' testimony into a coherent context, but also provides relevant historical facts. For example, in a homicide prosecution, a medical examiner usually testifies as to his expert medical opinion regarding the victim's cause of death.[119] Likewise, ballistics experts may testify that a particular bullet was or was not fired from a specific pistol,[120] while fingerprint comparisons[121] and bitemark comparisons[122] are routinely used to

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of organized crime. Nonetheless, the court upheld the trial judge's determination that the testimony assisted the jury. Since the expert's testimony was general in nature and scope, and the jury was instructed not to use the expert testimony to directly establish any issue, the court found that the testimony's prejudical effect did not outweigh its probative value. *Id.* at 1389; *see also* United States v. Dunn, 846 F.2d 761, 762-63 (D.C. Cir. 1988) (police detective's "modus operandi" testimony admissible in possession with intent to distribute cocaine prosecution); United States v. Nersesian, 824 F.2d 1294, 1307-08 (2d Cir. 1987) (agent's expert opinion regarding significance of recorded telephone conversations, meaning of narcotics jargon, and how drug-related conversations are conducted admissible), *cert. denied*, 484 U.S. 958 (1987).

118. *See, e.g.*, State v. Moran, 728 P.2d 248, 254-55 (Ariz. 1986) (expert testimony admissible to explain misconceptions concerning sexual assault victim's behavior).

119. *See, e.g.*, State v. Hunt, 287 S.E.2d 818, 822 (N.C. 1982); State v. Mulder, 629 P.2d 462, 463 (Wash. Ct. App. 1981). *See generally* Inbau, *Scientific Evidence in Criminal Cases (I)*, 24 J. CRIM. L. & CRIMINOLOGY 825 (1929); A. MOENSSENS, F. INBAU, & J. STARRS, SCIENTIFIC EVIDENCE IN CRIMINAL CASES § 5.06, at 227 (3d ed. 1986); C. TORCIA, WHARTON'S CRIMINAL EVIDENCE § 578, at 114 (14th ed. 1987).

120. *See, e.g.*, Reed v. State, 391 A.2d 364, 388-92 (Md. 1978) (Smith, J., dissenting) (discussing cases regarding admissibility of ballistics evidence); Commonwealth v. Ellis, 364 N.E.2d 808, 811 (Mass. 1977); State v. Alston, 243 S.E.2d 354, 360 (N.C. 1978) (expert testimony admissible on whether unfired bullet was chambered in gun). *See generally* A. MOENSSENS, F. INBAU & J. STARRS, *supra* note 119, § 4.08, at 220-23.

121. *See, e.g.*, United States v. Morgan, 559 F.2d 397, 399 (5th Cir. 1977) (prosecution's failure to establish fingerprint evidence chain of custody affected weight not admissibility of evidence), *cert. denied*, 435 U.S. 926 (1978); *Reed*, 391 A.2d at 386-88 (Smith, J., dissenting) (discussing cases on admissibility of fingerprint comparisons); People v. Jennings, 96 N.E. 1077, 1082 (Ill. 1911) (first recorded appellate decision admitting fingerprint evidence). *See generally* A. MOENSSENS, F. INBAU & J. STARRS, *supra* note 119, § 7.09, at 370-71.

122. *See* People v. Marx, 126 Cal. Rptr. 350, 356-57 (Cal. Ct. App. 1975) (expert dentists

prove that a particular person was present at a particular place or did a specific act. Expert hair comparison analysis,[123] spectrographic or "voiceprint" analysis,[124] and the results of DNA analysis[125] have also been used as probative evidence. In all of these situations, the expert not only educates the jury, he provides new facts and data that will help resolve a disputed issue.

Because of their distinct roles, the two types of expert witnesses pose different levels of concern regarding their influence upon the factfinder's duty to resolve the issues. Nonetheless, the first evidentiary issue that the trial judge must resolve is the same for both types of experts: Does this expert offer assistance, new insight or information to the factfinder? If this expert witness will not help the jury in its task, he may not testify.[126]

Frequently, a judge making a determination of "helpfulness," may

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could testify that bite on victim's nose was made by defendant's teeth); State v. Sager, 600 S.W.2d 541, 561-73 (Mo. Ct. App. 1980) (lengthy discussion of history of bitemark identification and judicial acceptance of technique), *cert. denied*, 450 U.S. 910 (1981); Kennedy v. State, 640 P.2d 971, 978 (Okla. Crim. App. 1982) (proper foundation laid to admit evidence of bitemark comparison); Patterson v. State, 509 S.W.2d 857, 863 (Tex. Crim. App. 1974) (objection over bitemark comparison goes to weight, not admissibility). *See generally* A. MOENSSENS, F. INBAU & J. STARRS, *supra* note 119, § 16.07.

123. *See* United States v. Holleman, 575 F.2d 139, 145 (7th Cir. 1978) (microanalyst could testify that hair found at scene matched "all microscopic, identifiable characteristics of defendant's hair); United States v. Oaxaca, 569 F.2d 518, 526 (9th Cir. 1978) (hair comparison testimony admissible though expert acknowledged some 2,000,000 people had hair similar to defendant's; uncertainty goes to weight of evidence not admissibility). *But see* United States v. Brown, 557 F.2d 541, 554-58 (6th Cir. 1977) (prosecution failed to prove reliability and accuracy of "ion microscopic analysis of human hair"). *See generally* A. MOENSSENS, F. INBAU & J. STARRS, *supra* note 119, at 8.14.

124. *See, e.g.*, United States v. Williams, 583 F.2d 1194, 1198-200 (2d Cir. 1978) (spectrographic analysis sufficiently reliable to admit; unlikely to mislead because jurors capable of hearing and comparing spectrograms), *cert. denied*, 439 U.S. 1117 (1979). *But see, e.g.*, Reed v. State, 391 A.2d 364, 377 (Md. 1978) (spectrogram analysis not generally acceptanced in scientific community under *Frye*, hence inadmissible).

125. *See* Andrews v. State, 533 So. 2d 841, 850 (Fla. Dist. Ct. App. 1988) (DNA evidence admissible because based on proven scientific principles); *see also* Cobey v. State, 559 A.2d 391, 398 (Md. Ct. Spec. App. 1989) (although DNA fingerprinting not always admissible, ruling that generally accepted in scientific community upheld); Spencer v. Commonwealth, 385 S.E.2d 850, 855-56 (Va. 1989), *cert. denied*, __ U.S. __, 110 S.Ct. 1171, 107 L. Ed. 2d 1073 (1990) (DNA print identification process admissible since reliable scientific technique and accepted in scientific community); State v. Schwartz, 447 N.W.2d 422, 428 (Minn. 1989) (DNA analysis meets *Frye* standard, however, DNA test results should have been excluded because improper quality control).

126. *See* C. MCCORMICK, *supra* note 28, § 13, at 30 (2d ed. 1972). "[T]he witness must have sufficient skill, knowledge, or experience in that field or calling as to make it appear that his opinion or inference will probably aid the trier in his search for truth." *Id.*

not have the same experience and knowledge of a particular subject as a jury.[127] For example, if he has presided over fifteen trials in which large quantities of cocaine were discovered, he may have intimate familiarity with cocaine packaging and distribution.[128] Nonetheless, members of the community outside the criminal justice system may have little or no awareness of these matters, or may have a completely erroneous understanding of what would appear to be common sense propositions to the judge. As noted by the New Jersey Supreme Court in *State v. Kelly*,[129] in a case dealing with "battered woman syndrome" evidence:

> The difficulty with the expert's testimony is that it *sounds* as if an expert is giving knowledge to a jury about something that the jury knows as well as anyone else, namely the reasonableness of a person's fear of imminent serious danger. That is not at all, however, what this testimony is *directly* aimed at. It is aimed at an area where the purported common knowledge of the jury may be very much mistaken, an area where jurors' logic, drawn from their own experience, may lead to a wholly incorrect conclusion, an area where expert knowledge would enable the jurors to disregard their prior conclusions as being common myths rather than common knowledge.[130]

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127. *See* 1 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE, *supra* note 29, ¶ 401[09], at 401-63 to 64. As Judge Weinstein advises trial judges with regard to assessing the probative value of evidence:

> It is important for the judge to bear in mind in a jury case that the experience of jurors may be quite different from his and that consequently their assessment of probabilities may vary from his. So long as a juror might rationally have his assessment of probabilities affected by proffered evidence that evidence is relevant . . . . Judges may be doubtful about probative force and yet admit evidence because the jury may rationally assess probative force differently from the way they do. That does not mean the jurors are acting irrationally or emotionally, but only that they are utilizing their own experience to supply and evaluate appropriate hypotheses of proof.

Id.

128. Numerous federal cases have permitted police expert testimony regarding the structure and operation of the narcotics industry and "underworld" enterprises since these domains are not familiar to the average juror. *See, e.g.*, United States v. Carmona, 858 F.2d 66, 69 (2d Cir. 1988) (detective may give expert testimony on meaning of coded language in memo book related to narcotics dealings); United States v. Espinosa, 827 F.2d 604, 611-12 (9th Cir. 1987) (officer's testimony admissible on methods and techniques of criminal activity such as "stash pad" and "pay and owe" cocaine ledgers), *cert. denied*, 485 U.S. 968 (1988); United States v. Cruz, 797 F.2d 90, 96 (2d Cir. 1986) (federal investigator could testify to use of food stamps in narcotics industry); United States v. Pugliese, 712 F.2d 1574, 1582 (2d Cir. 1983) (experts frequently allowed to testify on facets of narcotics transactions not within layperson's knowledge). *See supra* note 117.

129. 478 A.2d 364 (N.J. 1984).

130. *Id.* at 378; *see also* Fielder v. State, 756 S.W.2d 309, 316, 321 (Tex. Crim. App.

Thus, a trial judge should not exclude expert testimony merely because that evidence is not *wholly* "beyond the ken" of the jury or "beyond the jurors' common understanding."[131] If total ignorance of the subject matter were the criterion for admissibility, very little expert testimony would ever be heard.[132] Rather, the helpfulness of expert testimony is a matter of degree. If the expert testimony increases or enhances the jurors' understanding of a common phenomenon,[133] it may well "assist" them in their truth-seeking mission.

Thus, the first issue that the trial judge must address is whether an expert offers *any* new insight or perspective in putting the facts of a particular case into context or offers *any* relevant data which would help determine a fact in issue.[134] If a jury is as fully informed as an expert,[135] then obviously his testimony could be of no assistance. The

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1988). In *Fielder*, the Texas Court of Criminal Appeals noted that a psychologist should have been permitted to testify to the characteristics of battered women who continue to live with the batterer since the profession recognizes that most people believe they would personally leave. *Id.* at 316. The court concluded that the testimony should have been admitted because the average layperson does not understand why a woman endures an abusive relationship. *Id.* at 321.

131. *See supra* note 109. This ad hoc judicial fiat denominating specific areas of expertise as automatically within or outside "the common understanding of the jury" had led to wholly inconsistent and contradictory rulings without rationale or explanation. *See supra* note 8. One might wonder how an appellate court can be so certain of the common sense understanding of the 6 to 12 individual jurors who sit on a particular jury or how common sense understanding on the same topic might vary so dramatically between jurisdictions. It seems peculiar that some of these decisions suggest that because cross-examination *could* be effective in bringing out the concepts and characteristics to which an expert would testify, that is the *only* acceptable mode of proof.

132. People v. McDonald, 690 P.2d 709, 720 (Cal. 1984).

133. *See, e.g.*, Ibn-Tamas v. United States, 407 A.2d 626, 633 (D.C. App. 1979) (testimony on "battered woman syndrome" must provide relevant insight jury could not otherwise gain); *see also* 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[02] (jurors able to make judgments using common knowledge and experience, nevertheless, expert's specialized knowledge still helpful).

134. *See* United States v. Esch, 832 F.2d 531, 535 (10th Cir. 1987) (evidence on defendant's "dependant personality" inadmissible when neither insanity nor incompetence in issue; generalized testimony on personality characteristics excludable if within jury's knowledge and experience), *cert. denied*, 485 U.S. 908 (1988). *But see* United States v. Portsmouth Paving Corp., 694 F.2d 312, 326 (4th Cir. 1982) (Widener, J., dissenting) (trial court erred in excluding helpful but unnecessary expert testimony under rule 702).

135. *E.g.*, Powers v. State, 757 S.W.2d 88, 93 (Tex. App.—Houston [14th Dist.] 1988, pet. ref'd). In *Powers*, the murder defendant offered a former police officer's testimony that, in his opinion and based upon his previous experience as a police investigator, the defendant's version of an accidental shooting during the course of a struggle was accurate. *Id.* at 92-93. There was, however, nothing in his proffered testimony that showed his personal opinion was based upon any specialized experience, training, or education which differed from the jurors'

trial judge is certainly entitled to assess the degree of sophistication of a particular jury in making this determination. He may recall issues, questions, and concerns that were discussed during the voir dire.[136] By the time that an expert's testimony is proffered, the judge may have been able to assess the jurors' comprehension of a specialized subject by observing the jurors' reaction to the factual testimony.[137] Perhaps the fact witnesses satisfactorily explained the concepts and information sought to be developed through an expert and thus, expert testimony would add nothing new. Conversely, the jury may have reacted with disbelief when the fact witnesses testified and thus, the judge might determine that they have misconceptions or insufficient knowledge regarding the evidence and its significance. Further, one of the parties, by his own cross-examination, may create an issue which naturally calls for testimony by an expert to explain otherwise suspicious or inexplicable behavior.[138]

In all of these instances, the trial judge has great discretion in determining whether an expert might assist the factfinder in a particular case.[139] However, the trial judge may not receive much deference

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common understanding. *Id.* He did not offer new insight into the historical facts, he simply offered an alternative opinion. The appellate court held the testimony inadmissable. *Id.* at 94.

136. *See* State v. Middleton, 657 P.2d 1215, 1220 (Or. 1983) (testimony on traits of child sexual assault victim admissible when prospective jurors without knowledge or experience).

137. *See* United States v. Hoffman, 832 F.2d 1299, 1310 (1st Cir. 1987). In *Hoffman*, the court of appeals upheld the admission of a DEA agent's testimony decoding drug trade terminology since the prosecution for conspiracy to possess cocaine with the intent to distribute was largely based upon intercepted telephone calls between the defendant and another. In permitting this expert testimony, the court noted that:

> The trial judge has a hands-on familiarity with the nuances of the case—nuances which may not survive transplantation into a cold appellate record. . . . We find, too, that the subject matter lent itself sufficiently well to expert testimony. Lay jurors cannot be expected to be familiar with the lexicon of the cocaine community.

Id. at 1310.

138. In *United States v. Winters*, for example, a defendant was accused of kidnapping and violating the Mann Act. 729 F.2d 602, 604-05 (9th Cir. 1984). During cross-examination of the alleged victims, the defense suggested that the victims were not kidnapped, but voluntarily accompanied the defendant because they failed to take advantage of opportunities to escape or to call for help. *Id.* Because this behavior was inconsistent with the layman's common knowledge of the "appropriate" behavior of a kidnap victim, the government was permitted to rebut this contention with expert testimony. A psychiatrist testified to the general attributes of "post-traumatic stress disorder" and stated that the victims were unlikely to escape unless they felt safe and knew the defendant was not nearby. *Id.* The prosecutor was then permitted to call a forensic psychologist who testified that, as a class, women subjected to forced prostitution "move through different stages, from seduction to assault, and through a dehumanizing conditioning process designed to make them feel completely helpless." *Id.*

139. *See, e.g., In re* Air Crash Disaster at New Orleans, 795 F.2d 1230, 1233 (5th Cir.

from the appellate courts if he fails to address and analyze each criterion for admitting expert testimony.[140] Thus, to avoid reversal, the judge should explain the factual and legal rationale for his ruling at each step of the process.

Frequently, the expert can outline the difference between the general community's understanding of an area and how it differs from the findings or interpretation of the "expert" community.[141] Thus, a sponsor of expert testimony should make a detailed proffer, on the record, as to: 1) the area of expertise; 2) the general community understanding of the area; 3) how and to what degree that understanding is either incomplete, unclear, or incorrect; 4) how an expert's testimony will clarify that area of expertise; 5) how that clarification will put the particular historical facts pertinent to the case into proper context; and 6) how the expert testimony can assist the jury in reaching an accurate decision by supplying educational and relevant data. The proponent must educate the judge as to the area and reliability of the expertise, and the need for its use in the case. The trial court should carefully consider and articulate the particular aspects of the present case which militate in favor of or against a finding that a particular expert might "assist" a particular jury.[142] If the trial judge

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1986). The court held that the trial court abused its discretion in permitting an economist to testify to wholly speculative facts regarding a specific person's anticipated lifetime income. The court noted the difference between "explanative" experts and experts who are the source of factual evidence. An appellate court gives greater deference to a trial court's decision in admitting explanative expert testimony. *Id.*; Bridger v. Union Railway Co., 355 F.2d 382, 387 (6th Cir. 1966) (judge has broad discretion because in best position to determine if jury will receive help from expert).

140. Ibn-Tamas v. United States, 407 A.2d 626, 635 (D.C. App. 1979). The court noted that although a trial court's ruling excluding expert testimony is reversible only for an abuse of discretion, it must exercise discretion "with reference to *all* the necessary criteria . . . . Thus, the appellate court must not affirm a ruling premised on trial court discretion unless the record clearly manifests either (1) that the trial court has ruled on each essential criterion, or (2) that the trial court, as a matter of law, had 'but one option.' " *Id.*

141. *E.g.*, Fielder v. State, 756 S.W.2d 309, 316 (Tex. Crim. App. 1988).

142. *See* United States v. Schmidt, 711 F.2d 595, 599 (5th Cir.) (psycholinguistic expert testimony properly excluded in perjury trial because it did not assist jury), *cert. denied*, 464 U.S. 1041 (1984); *see also* State v. Chapple, 660 P.2d 1208, 1223 (Ariz. 1983). In *Chapple* the Arizona Supreme Court stated:

> The phrase "within the discretion of the trial court" is often used but the reason for that phrase being applied to certain issues is seldom examined. One of the primary reasons an issue is considered discretionary is that its resolution is based on factors which vary from case to case and which involve the balance of conflicting facts and equitable considerations. Thus the phrase "within the discretion of the trial court" does not mean that the court is free to reach any conclusion it wishes. It does mean that where there are

rules that the expert testimony might assist the jury in a case, he must then turn to the second evidentiary issue: Does the expert testimony cover a subject that experts know enough about to reach reliable results?

V. THE REQUIREMENT FOR RELIABILITY OF NOVEL EXPERTISE

Reliability of the expertise is the linchpin of rule 702.[143] Once the trial judge determines that expert testimony might aid the factfinder in a particular case, he must then decide if the general field of expertise is presently susceptible to any expert classification, analysis, and discussion. The reliability of expert testimony raises two issues: (1) What is the "absolute" reliability of the offered evidence; and (2) Is this reliability sufficient to allow the factfinder to consider the evidence for the specific purposes offered in the case? To distinguish the two inquiries, imagine first a linear scale marked from 0 to 10 as a scientific reliability spectrum:

> This scale measures the reliability and validity of the scientific endeavor, the degree to which test results may be objectively replicated and reach the same results. This absolute reliability is the historical concern of both the *Frye* test and the McCormick test. This is also where the reliability analysis ended under the *Frye* standard because once an appellate court upheld the exclusion of a particular type of scientific evidence, stare decisis applied to exclude that category of expertise in all future trials.[144]

As a result of the judicial system's focus on scientific rather than evidentiary issues,[145] the judicial system has often overlooked a second concern: How and why is the expertise being offered? Put another way: Is the expertise reliable enough for the purpose it is being offered? For example, if the expertise is being offered as a conclusive opinion which resolves a disputed issue, the concern for absolute reli-

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> opposing equitable or factual considerations, we will not substitute our judgment for that of the trial court.

Id.

143. *See* State v. Cavallo, 443 A.2d 1020, 1026 (N.J. 1982) (evidence must be sufficiently reliable); *see also infra* notes 166-71 and accompanying text; Lederer, *Rules of Admissibility of Scientific Evidence*, 115 F.R.D. 79, 84 (1987) (Lederer's proposal) (proposing that rule 702 be amended to begin: "If *reliable* scientific, technical, or other specialized knowledge will assist the trier of fact . . .").

144. *See* Jones v. United States, 548 A.2d 35, 40 (D.C. App. 1988) (general acceptance issue transcends inquiry at particular trial and establishes law of jurisdiction).

145. *See* Moenssens, *supra* note 8, at 548-59.

ability should be much greater than if the same expertise is merely being offered as general background information. Similarly, if the expert offers the factfinder a tentative result, his testimony should be evaluated differently than if he offers a scientifically conclusive result. Thus, an inquiry into the absolute reliability of expert testimony should reflect this varying degree of concern.

The type and depth of inquiry remains the same whether the expert testimony is offered as general background information or as specific scientific data and opinion on the particular issues at trial. The need for scientific reliability and validity, however, increases along a single scale as the expertise becomes more particularized, more scientifically complex, and more central to the disputed issues. Judges and litigants are normally familiar with this single spectrum mode of analysis which is similar to the balancing of countervailing factors under rule 403. It addresses all of the concerns regarding the possible unreliability of novel expert evidence, but gives each of them no more than its due weight.[146] It permits the admission of some "factual" expertise in those instances where the testimony does not threaten the integrity of the factfinding process and disallows the same expertise in those instances where it threats to supplant rather than enhance the jury's role.

Thus, the inquiries that a trial judge must make are: 1) whether the proffered expertise has any scientific reliability; and 2) whether that reliability is sufficient given the type of testimony offered in the specific case.

In an inquiry of "absolute" reliability, the focus is upon the degree of professional study and scrutiny a scientific field has received. As Professor McCormick has framed the issue, expert testimony is not admissible if "the state of the pertinent art or scientific knowledge does not permit a reasonable opinion to be asserted even by an ex-

146. State v. Cavallo, 443 A.2d 1020, 1026 (N.J. 1982). In *Cavallo*, the New Jersey Supreme Court explained the necessity for viewing scientific reliability within the specific context of the particular trial:

> The policy underlying [the expert evidence rule] is to exclude expert evidence when the danger it poses of prejudice, confusion and diversion of attention exceeds its helpfulness to the factfinder because the expertise is not sufficiently reliable. In part, the Rule entails a weighing of reliability against prejudice in light of the context in which the evidence is offered. Expert evidence that poses too great a danger of prejudice in some situations, and for some purposes, may be admissible in other circumstances where it will be more helpful and less prejudicial.

Id.

pert."[147] An expert who has merely made a few personal, anecdotal observations of a particular phenomenon is in no better position to describe the general significance of those observations than is a juror.

For example, suppose one party offers to bring in a professional "crystal ball gazer" who is prepared to testify that she has looked into her crystal ball and seen the recreation of a murder, complete with descriptions of the murderer, weapon, and victim. Suppose also that she has a one hundred percent success rate. She has looked into her crystal ball forty different times and seen an event, and every time she has described the scene, it has been objectively verified by others as accurate. Her testimony would surely assist the factfinder if it were accurate this time. Unfortunately, she is the only accurate crystal ball gazer in the world. She has no idea how or why her crystal ball works. She has kept only sporadic records. No one has studied either her methodology or her results. Her system, whatever it is, has worked in the past, but no one knows how, why, or for how long it will work. There is no way that either she or her technique can be effectively cross-examined or tested by other experts. Since her testimony cannot be challenged and could later be found to be inaccurate, a fact-finder who legitimately relied upon her uncontested opinion might later regret doing so if future experiments show that her crystal ball is no longer perfect.[148] This expertise is simply too personal, too anecdotal, too experimental, too far outside any established professional field to allow in a court of law.[149]

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147. C. MCCORMICK, EVIDENCE, *supra* note 28, § 13 at 31.

148. *See generally Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 216-17 (1983) (Saltzburg's comments).

149. For an interesting example of this type of "crystal ball" expertise, see United States v. Tranowski, 659 F.2d 750, 755-57 (7th Cir. 1981). Walter Tranowski was charged with perjury, allegedly committed at the trial of his brother Stanley, for passing counterfeit money at a Burger King on the afternoon of May 12, 1974. *Id.* at 751. At Stanley's trial, Walter testified that he took a photograph of his brother, mother, and a dog named Jerry in their back yard on May 12th and then spent the rest of the afternoon with Stanley, thus providing him with an alibi. *Id.* at 752. The jury convicted Stanley nonetheless, and the government eventually indicted Walter for perjury. At Walter's trial the government offered testimony of a well qualified astronomer that the photograph Walter swore he took on May 12, 1974, could not have been taken on that day based upon the length of the shadows seen in the picture. *Id* at 752-53. The astronomer based his opinion upon a "sun chart" which had been prepared some fifteen years earlier and was used solely to measure the height of lunar mountains. *Id.* at 753. The Seventh Circuit, while accepting the theoretical soundness of dating photographs by measuring the length of shadows and then trigonometrically calculating the sun's position, found that this particular test was wholly unreliable since: 1) no control experiments were conducted to verify the accuracy of the technique; 2) possible distortions caused by the perspective of the

Conversely, if a witness proposes to testify about a field of specialized knowledge which has developed through a methodology generally accepted in that field, then the fact that particular experts within that field may differ as to the significance or interpretation of the data ought not be determinative. As was noted by a District of Columbia court in *Ibn-Tamas v. United States*,[150] one of the first "battered woman syndrome" cases, what is essential is that the expert's methodology is generally accepted in his field, not that his colleagues accept his particular study results.[151]

For example, in the context of the battered woman syndrome, the issue is whether the expert's "methodology for identifying and studying battered women has such general acceptance — not whether there is, in addition, a general acceptance of the battered woman concept derived from that methodology."[152] If an expert's conclusions are required to be generally accepted rather than his methodology, then a trial judge, who is not a scientific expert, would be responsible for deciding which opposing scientist or expert is more scientifically accurate.[153] But that is precisely the job of the jury. It is the factfinder's role to decide which expert, if any, is believable. Once the methodology has been outlined as being proper in an area, the better approach is to use the same procedure for admitting relevant scientific evidence as for other expert testimony and permit challenge by cross-examination.[154]

Under rule 702, even when a "factual" expert testifies regarding a particular test result and gives a specific opinion in a case, that opinion need not be one that is "generally accepted" in the pertinent scientific community. Indeed, "unanimity of opinion in the scientific community, on virtually any scientific question, is extremely rare.

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picture were not accounted for; 3) there was no evidence to demonstrate that the shadow on the photograph accurately reflected the actual lengths of the shadows cast; 4) the expert failed to take into account the slope of the ground in the defendant's back yard; 5) no verification of the solar orientation of the house was made; and 6) the chart itself was drawn for the 22nd of each month, not the 12th. *Id.* In sum, the court found that this testimony was pseudo-scientific "razzle dazzle" without any solid substance.

150. 407 A.2d 626 (D.C. App. 1979).

151. *Id.* at 638.

152. *Id.*

153. *See id.* at n.24.

154. United States v. Baller, 519 F.2d 463, 466 (4th Cir.) (admitting testimony identifying defendant's voice by spectrographic analysis), *cert. denied*, 423 U.S. 1019 (1975).

Only slightly less rare is a strong majority."[155] As with any other profession or discipline, different practitioners will form different opinions regarding the significance of particular data. Thus, there seems to be little logic, other than the hypothetical concern for the "mystic infallibility" of scientists,[156] in formulating one rule of evidentiary admissibility for novel scientific expertise and an entirely different rule for the admission of all other types of expertise. The use of a double standard for scientific evidence confuses both the scientific and legal community[157] and only increases the puzzlement of the trial judge who must rule on its admissibility.

While the chief advantage of the *Frye* test of general scientific acceptance lay "in its essentially conservative nature,"[158] that strict evidentiary standard is superceded by the liberal, inclusive Federal Rules of Evidence. Historically, the *Frye* test was born in an era that was judicially conservative.[159] All evidence, not merely expert testimony, was presumed to be inadmissible unless the proponent could show otherwise.[160] Now, however, the presumption has been reversed; relevant evidence is admissible unless the opponent can show it ought not be admitted.[161] However, the legitimate evidentiary concern under rule 702 is that jurors may give greater weight to impressive sounding expert opinions than these opinions deserve from their track record of scientific reliability and validity.[162] Courts should focus directly upon this legitimate concern in the specific case at hand rather than laying down blanket rules prohibiting the admission of particular types of expertise in *all* cases. Thus, the relevant question is whether the par-

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155. United States v. Williams, 583 F.2d 1194, 1198 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979).

156. People v. Kelly, 549 P.2d 1240, 1245 (Cal. 1976).

157. *See supra* note 40.

158. *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 206 (1983) (Giannelli's comment). Professor Gianelli argues that maintenance of the *Frye* test operates as a burden of proof allocation in criminal trials. *Id.* He is correct. The *Frye* test erects an artificial, judicial barrier against a specific type of evidence, novel scientific expertise, that applies in no other evidentiary context. Such a barrier may suit the policy preferences of judges who are skeptical about specific scientific specialties, but it does not suit the liberal attitude towards admissibility of evidence contained in the Federal Rules of Evidence themselves or in the decisions by the United States Supreme Court. *See* Sections III & IV.

159. *See, e.g.*, Rossi, *The Silent Revolution*, 9 LITIGATION 13, 13 (1983) (federal rules of evidence favor admission of all relevant evidence).

160. *See* 3 J. WEINSTEIN & M. BERGER, *supra* note 2, ¶ 702[03], at 702-44.

161. *Id.* ¶ 702[02], at 702-30.

162. Moenssens, *supra* note 8, at 566-67.

ticular expertise is helpful for the precise purpose that it is being offered in the specific case.[163]

In examining the absolute reliability of the proffered expert evidence, some courts have developed a more elaborate framework. In *United States v. Downing*,[164] for example, the Third Circuit Court of Appeals reversed the district court's original blanket prohibition against the admissibility of expert testimony concerning the unreliability of eyewitness identifications.[165] Instead, the court held that rule 702 requires a trial judge to conduct a preliminary inquiry into the reliability of the "novel" evidence by examining several factors:

(1) the relationship of this technique to more established modes of scientific analysis;[166]
(2) the existence of specialized literature dealing with the technique;[167]
(3) the qualifications of the expert witness;[168]

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163. *Id.* at 567.

164. 753 F.2d 1224 (3d Cir.), *on remand*, 609 F. Supp 784 (E.D. Pa.), *aff'd without op.*, 780 F.2d 1017 (3d Cir. 1985).

165. 753 F.2d at 1226, 1229.

166. Ibn-Tamas v. United States, 407 A.2d 626, 638 (D.C. 1979). The judicial focus should be upon the methodology of the novel expertise, not on the conclusions reached. *Id.* at 638 n.23-24. Hence, in the field of clinical psychology, the pertinent inquiry is whether the expert's method of identifying and studying psychological characteristics is an accepted method, leading to the type of conclusions (though not necessarily the substance of the conclusion) underlying the expert's opinion. The fact that other experts, employing the same methodology, might reach opposite conclusons is not determinative. There well may be a scientific "information gap" when the substantive conclusions that are generally accepted within the specific field do not actually reflect the newest, most accurate testing. *Id.* It is not the judge's function to determine which, if any, expert's conclusions are correct. In law, that is the purpose of a jury. *Id.*

167. Here, the focus is not on the number of articles published by a certain number of experts, but rather whether this technique is one that is taken seriously in the relevant professional community. In *United States v. Metzger*, the defendant complained on appeal that the expert's opinion, based on a novel application of the accepted scientific technique of thin layer chromatography to the presence of monomethylamine nitrate, was "new, untested, and not accepted in the general scientific community." 778 F.2d 1195, 1203-04 (6th Cir. 1985), *cert. denied*, 477 U.S. 906 (1986). He claimed that since the testifying witness had published the *only* paper in the entire field of expertise, that field was too novel to be scientifically reliable. The court rejected this argument by saying:

> The implication is that a publication supports a witness only where the view held by the witness is widely shared by other experts in the field. We believe this view is too limited. Articles in professional journals are also of great value in that the basis of the article is subjected to close scrutiny by other experts in the field.

Id. at 1204.

168. When determining the qualifications of an expert, the expert's experience, knowledge, and authority are dispositive. Some courts have also focused upon the expert's scientific neutrality. In one recent opinion, the Michigan Supreme Court declared electrophoresis test-

(4) the non-judicial uses to which the technique is put;[169]
(5) the frequency with which a technique leads to erroneous results;[170]
(6) the type of error generated by a novel technique;[171] and
(7) the extent to which other courts have permitted expert testimony based upon this technique.[172]

Judges Weinstein[173] and McCormick[174] have also compiled lists of

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ing of dried bloodstains inadmissible by ignoring the testimony of the prosecution witneses who were familiar with the technique and relying upon the defendant's witnesses who were unfamiliar with the technique. People v. Young, 391 N.W.2d 270, 274 (Mich. 1986). The prosecution's witnesses were discounted because they performed electrophetic tests as a part of their professional duties and were not impartial and disinterested. *Id.* at 275-76. As was pointed out in the dissent, the result of such a "Catch-22" rule is "that those scientists who know the most about the process are viewed, as a matter of law, as the least persuasive witnesses." *Id.* at 290 (Boyle, J., dissenting). Such a test "represents a regressive approach to scientific developments which, parenthetically, would have devalued the opinions of Jonas Salk, Albert Einstein, or Marie Curie." *Id.* Further, this is an entirely novel mode by which to judge evidentiary admissibility. Even under the strict *Frye* standard impartiality has never been a predicate to admissibility. *See* Andrews v. State, 533 So. 2d 841, 849 n.9 (Fla. App. 1988).

169. A technique which has been developed and used in nonlitigation areas may be considered more reliable. As Professor Giannelli notes:

> If a scientific procedure, although novel in its forensic application, has been accepted in the scientific community for nonforensic purposes, the trial judge could rely on that acceptance as circumstantial evidence of the procedure's validity.

Symposium on Science and the Rules of Evidence, 99 F.R.D. 187, 203 (1983) (Giannelli's comment).

170. A technique may be considered unreliable due to the technique's error rate and the dependability of that error rate. *See, e.g.*, United States v. Williams, 583 F.2d 1194, 1198 (2d Cir. 1978) (study found error rate of false identification in voice prints only 6.3%, reduced to 2.4% when doubtful comparisons eliminated). While the technique need not be "error free" before experts are permitted to testify to results derived from that technique, the jury should be informed of the variables that could lead to an error. The trial judge's concern is whether the testing process is so inherently error-ridden that he finds, by a preponderance of the evidence, that the result is most likely unreliable. *See infra* text accompanying notes 240, 255.

171. As the court in *Downing* noted, testing errors which could lead to a false positive are significantly more damaging to a technique's reliability than are errors which prevent the test from reaching any result at all or which result in a false negative. *See* P. GIANNELLI & E. IMWINKELRIED, *supra* note 35, at 241 (discussing unreliability of polygraph testing since errors tend to be more false positive than false negative, that is more likely to identify innocent person as deceptive than guilty person nondeceptive).

172. While judicial acceptance of a scientific technique is not a prerequisite to admissibility, the fact that other courts have considered the same scientific principles is a helpful guide to analysis. Courts should beware, however, of merely shifting from scientific "nose counting" to judicial "nose counting" when addressing the reliability of expert evidence.

173. 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[03], at 702-41 to 702-42. Judge Weinstein notes

> a variety of factors which the court should consider as indicators of reliabilty:
> [1] [the technique's general acceptance in the field,]

factors which trial judges might use as a guide to assessing the reliability of novel expert evidence. While a judge may find all of these factors helpful in determining absolute reliability, no one of them should be considered conclusive. Instead they should be a guide to decision making. Each party should articulate those aspects of the professional field which militate toward judicial acceptance or rejection of the expertise and provide specific data or testimony to support that position.[175] The trial judge should then balance the pros and cons of each position within the general, liberal framework of the federal rules. The issue is only whether an area or technique is so experimental or so outside the mainstream of the profession that it offers no value whatever to the factfinder.

Once the judge determines that a particular area of expertise has sufficient reliability to be a proper subject for testimony in some instances, he must then focus upon the type of expert testimony offered

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[2] the expert's qualifications and stature,
[3] the use which has been made of the new technique,
[4] the potential rate of error,
[5] the existence of specialized literature, and
[6] the novelty of the invention,
[7] [and the extent to which the technique relies on the subjective interpretation of the expert.]

174. McCormick, *Scientific Evidence: Defining a New Approach to Admissibility*, 67 IOWA L. REV. 879, 911-12 (1982). Judge Mark McCormick (not to be confused with the late Dean and Professor Charles McCormick of the Univeristy of Texas) proposes a "new model of traditional analysis" by which judges would consider:

(1) the potential error rate in using the technique,
(2) the existence and maintenance of standards governing its use,
(3) presence of safeguards in the characteristics of the technique,
(4) analogy to other scientific techniques whose results are admissible,
(5) the extent to which the technique has been accepted by scientists in the field involved,
(6) the nature and breadth of the inference adduced,
(7) the clarity and simplicity with which the technique can be described and its results explained,
(8) the extent to which the basic data are verifiable by the court and jury,
(9) the availability of other experts to test and evaluate the technique,
(10) the probative significance of the evidence in the circumstances of the case, and
(11) the care with which the technique was employed in the case.

Id. (footnotes omitted).

175. The party opposing the offered evidence should present his rebuttal testimony on the technique's unreliability at the preliminary evidentiary hearing. If the opponent deliberately bypasses this opportunity to present rebutting experts, the appellate court's determination of whether the trial judge abused his discretion may be based solely on the record at the time the evidence was offered. United States v. Brown, 557 F.2d 541, 557 n.17 (6th Cir. 1977).

in the present case. The concern is whether the expertise offered in the particular trial is sufficiently accurate and reliable that the jury does not overvalue either the scientific technique or the expert's testimony. Once again, the trial judge is entitled to consider the particular jury's expectations as a guide to the degree of reliability required.

The first factor to consider is whether the expertise involves a "soft" or "hard" science. This dichotomy reflects the concern that jurors may overvalue the probative worth of "hard" science data.[176] If the jury perceives that the results from a particular scientific test are conclusive, when, in fact, they are only possible or probable, then the scientific evidence may take on greater significance to the jurors than it deserves. One court, in assessing the predicted weight that a jury might give to the proffered expertise noted that, prior to admitting the results of scientific tests, a judge should question whether "an exaggerated popular opinion of the accuracy of a particular technique makes its use prejudicial or likely to mislead the jury."[177] Conversely, an uncertain technique or a technique with a high possibility of error may be reliable if the jury recognizes the technique's problems.[178]

A second consideration is whether the expertise involves a tentative result or a conclusive result. For example, in the field of hair sample comparisons, a forensic expert using current technology can only determine that a hair found at the scene of a murder is "microscopically similar" to one taken from the defendant.[179] A jury, however, might translate testimony that the evidence *could have* come from the defendant into a belief that the expert really meant the evidence *did* come from the defendant.

Many courts and commentators are legitimately concerned that 10 karat evidence may be mentally transformed into 24 karat evi-

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176. *See, e.g.*, People v. King. 266 Cal. App. 2d 437, 461, 72 Cal. Rptr. 478, 493 (1968) (aura of certainty surrounding new scientific process must not mislead jury and obscure its experimental nature).

177. United States v. Baller, 519 F.2d 463, 466 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975).

178. Feeney, *Expert Psychological Testimony on Credibility Issues*, 115 MIL. L. REV. 121, 168 (1987).

179. *See* United States v. Brady, 595 F.2d 359, 362-63 (6th Cir.) (hairs "similar"), *cert. denied*, 444 U.S. 862 (1979); United States v. Cyphers, 553 F.2d 1064, 1072 (7th Cir.) (hairs "could" come from same source), *cert. denied*, 434 U.S. 843 (1977); United States v. Jefferson, 17 M.J. 728, 731 (N.-M.C.M.R. 1983) (estimate of 1 in 4,500 probability that hair came from another); Lopez v. State, 643 S.W.2d 431, 433 (Tex. App.—Corpus Christi 1982, no pet.) (chances of random resemblance between hair samples 1 in 15,000,000,000).

dence.[180] If jurors do not understand the difference between expertise that points potentially rather than conclusively to a specific conclusion, they may be mislead, not necessarily by the expert,[181] but by their own thought processes.[182] This phenomenon has led some courts to suppose that jurors consider all scientific evidence as "likely to be shrouded with an aura of near infallibility, akin to the ancient oracle of Delphi."[183] While it may be true that "[s]cientific evidence impresses lay jurors,"[184] it does not necessarily follow that jurors are incapable of assessing its true value in a specific context. In fact, appellate courts and commentators may be vastly overrating the gullibility and the scientific naivete of present day juries.[185] Jurors are not

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180. *See, e.g.*, C. MCCORMICK, EVIDENCE, *supra* note 28, at 490 n.32 (2d ed. 1972), in which Professor McCormick notes:

> the courts, when undertaking to pass on the question whether the evidence has sufficient probative value to assist the jury, mix that question with the one of effect on the jury, and seemingly require that the probative value be as great as the courts decide the jury will think it to be. In the case of matters labelled "lie detector," "truth serum," "voiceprint," or "mathematical certainty," the courts seem to conclude that the jury will consider the tests infallible, and so require that they be shown to be infallible before they are admitted.

Id.; *see also* Moenssens, *Admissibility of Scientific Evidence*, *supra* note 8, at 566; Imwinkelried, *Judge Versus Jury*, *supra* note 29, at 600-03.

181. *See* Bazelon, *supra* note 7, at 213. Bazelon writes that "[a] research scientist is usually acutely aware of the tenuousness of his assumptions, the competing interpretations of his data, and the limits of his knowledge. . . . If anything, the scientist is more likely to overemphasize uncertainty than to hide it." *Id.*

182. *See* Imwinkelried, *Judge Versus Jury*, *supra* note 29, at 601-03 (scientific validity studies often reveal margin of error; jury likely to overvalue technique which usually but doesn't always work).

183. United States v. Alexander, 526 F.2d 161, 168 (8th Cir. 1975); *see also* Barefoot v. Estelle, 463 U.S. 880, 926-35 (1983) (Blackmun, J., dissenting) (psychiatric predictions of future danger scientifically unreliable and highly prejudicial); United States v. Addison, 498 F.2d 741, 744 (D.C. Cir. 1974).

184. E. Imwinkelried, *Evidence Law and Tactics for the Proponents of Scientific Evidence*, in SCIENTIFIC AND EXPERT EVIDENCE 33, 37 (2d ed. 1981). Professor Imwinkelried further noted:

> [jurors] tend to assume [scientific expertise] is more accurate and objective than lay testimony. A juror who thinks of scientific evidence visualizes instruments capable of amazingly precise measurement, of findings arrived at by dispassionate scientific tests. In short, in the mind of the typical lay juror, a scientific witness has a special aura of credibility.

Id.

185. In fact, several research studies suggest that polygraph evidence, which spawned the *Frye* rule and has historically been cited as most likely to "overwhelm" juries, does not significantly affect or impress juries. United States v. Piccinonna, 885 F.2d 1529, 1533 (11th Cir. 1989); *see also* Imwinkleried, *The Standard for Admitting Scientific Evidence: A Critique From the Perspective of Juror Psychology*, *supra* note 29, at 566-70 (empirical studies find that "jurors frequently reject polygraph evidence and return verdicts inconsistent with the polygraphist's

necessarily predestined to discard their common sense at the sight of a white lab coat.[186]

However, judges should be more cautious when deciding the admissibility of expert evidence which is claimed to be virtually exact, as with fingerprint or DNA comparisons, and which points to a particular defendant, and which is wholly beyond the jury's ability to compare, observe, or interpret. Otherwise, the factfinder may become confused between whether a general technique is reliable and whether a general technique produced an accurate result in a particular instance.

For example, in *Andrews v. State*,[187] a Florida appellate court first addressed the admissibility of DNA testing results in a criminal trial and held that admissibility should be governed by general relevancy and reliability standards rather than any special evidentiary hurdles set up for scientific evidence.[188] The court listed various factors that supported the admissibility of this "novel" forensic use, such as prior use in a nonforensic setting, the existence of specialized literature dealing with the technique, the use of quality control samples throughout the process, and the testimony that if the process did not work, it would ordinarily lead to no result rather than an erroneous result.[189] Since the testimony at trial showed that "the test was administered in conformity with accepted scientific procedures so as to ensure to the greatest degree possible a reliable result,"[190] the DNA test results were properly admitted. On the other hand, in *People v. Castro*,[191] the New York Supreme Court found that the particular result reached in the specific DNA test done for that trial was unreliable since the quality control procedures adopted by the laboratory that had conducted the test had not been followed.[192] The court accepted

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testimony"); Raskin, *supra* note 61, at 64-66 (emperical data indicates polygraph testimony does not unduly influence jury).

186. *See* Imwinkelried, *The Standard for Admitting Scientific Evidence: A Critique from the Perspective of Juror Psychology*, *supra* note 29, at 570 (most emperical data, contrary to *Frye* assumption, indicates that jurors may not be overwhelmed by scientific testimony); *see also* Austin, *Jury Perceptions on Advocacy: A Case Study*, 8 LITIGATION 15, 16-17 (Summer 1982) (jurors skeptical toward expert witnesses).

187. 533 So. 2d 841 (Fla. Dist. Ct. App. 1988).

188. *Id.* at 846-47.

189. *Id.* at 850.

190. *Id.* at 851.

191. 545 N.Y.S.2d 985 (N.Y. Sup. Ct. 1989).

192. *Id.* at 996-97.

the general reliability of DNA testing, and noted that disputes concerning the reliability of any particular DNA test normally go to the weight of the evidence, not its admissibility.[193] However, this specific test was excluded because an improper procedure was used which made the particular test result unreliable for the purpose offered.[194] It was a 10 karat "maybe" test, masquerading as a 24 karat "yes" test. The New York court then suggested several pretrial hearing procedures[195] which would guard against the evidentiary use of a specific unreliable test while usually admitting novel scientific testing such as DNA comparisons. These cases reveal a proper judicial regard for liberal admissibility standards under modern expert evidence rules while at the same time guarding against admission of a specific unreliable test result.[196] By avoiding blanket rules of admission or exclusion and focusing upon the reliability of the specific test procedure and result offered in a particular case, courts permit novel expert testimony which enhances the reliability of the jury's verdict and keep out only those which threaten the integrity of the verdict.[197]

If an expert wishes to state that his data and testing is "exact" the

193. *Id.* at 999.

194. *Id.* at 997.

195. *Id.* at 999. These procedures included a requirement that the proponent of DNA evidence give the adversary pretrial discovery of such items as copies of the DNA autorads, laboratory books, quality control tests, the actual test report, the data pool used, any written reports by the laboratory setting forth its methodology and test measurements, and any relevant written statements regarding contaminants, use of a degraded sample, any observed laboratory defects or errors, and any chain of custody documents. *Id.*

196. *See id.*; *see also* People v. Wesley, 533 N.Y.S.2d 643, 644 (N.Y. 1988) (DNA fingerprinting at "cutting edge" of forensic science; acceptance by courts will "revolutionize the administration of criminal justice"). In *Wesley*, the prosecution sought a pretrial order to extract blood from two different defendants to make DNA comparisons with evidence obtained from the victims or crime scene. *Id.* at 643. Prior to ruling on the order, the court held a lengthy *Frye* hearing since it was the first New York court to consider the possible admissibility of DNA fingerprinting. *Id.* at 644. The defendant did not challenge the validity or general acceptance of the scientific principles and technology underlying DNA fingerprinting. *Id.* at 650. Instead, he attacked the laboratory procedures, methodology, quality controls, and population studies employed by the company which conducted the test. *Id.* The New York judge noted that these issues normally concern the weight of the evidence, not its admissibility. But when a court is faced with a novel scientific technique, such inquiries are proper in determining whether the methodology itself is sufficiently reliable to be considered by the factfinder. *Id.* at 650-51. After reviewing all of the expert testimony, the judge found that "DNA fingerprinting—its underlying principles, procedures, and technology—is a scientific test that is reliable and has gained general acceptance in the scientific community," and granted the prosecutor's motions to take blood samples. *Id.* at 659.

197. *See* People v. Wesley, 533 N.Y.S.2d 643, 644 (N.Y. 1988). The court wrote that, "if DNA fingerprinting works and receives evidentiary acceptance, it can constitute the single

professional field must be sufficiently developed to permit such a precise and conclusive opinion.[198] Conversely, if the expert's opinion is more tentative and he is prepared to discuss uncertainties in his technique and conclusions, his testimony is less likely to carry with it the potential to mislead.[199]

A third consideration is whether the expertise is easily understandable. Is this a common sense field of expertise or a complex one? An expert may make a claim or state an opinion that concerns an area of expertise that neither judges nor juries can rationally assess for themselves.[200] In this situation there is a legitimate need for independent verification of the expert's technique and data because the jury is asked to accept on faith that the evidence upon which they may rest a verdict in a criminal case is accurate and reliable.[201] For example, the theory underlying bitemark comparisons is easily understood because both the technique and explanation are simple. The jurors can make a visual comparison of the unknown bitemark and the known dental

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greatest advance in the 'search for truth,' and the goal of convicting the guilty and acquitting the innocent, since the advent of cross-examination." *Id.* at 644.

198. *See generally Symposium on Science and Rules of Evidence*, 99 F.R.D. 187, 206-08 (1983) (Giannelli's view) (discussing "information gaps" in developing scientific fields).

199. *See, e.g.*, United States v. Hardrich, 707 F.2d 992, 994 (8th Cir. 1983) (no abuse of discretion to permit government handwriting expert to testify to "inconclusive" opinions that some deposit slips "may have been written" by defendant and he "probably" wrote endorsements on certain checks), *cert. denied*, 464 U.S. 991 (1983); United States v. Stifel, 433 F.2d 431, 438 (6th Cir. 1970) ("neither newness nor lack of absolute certainty in a test suffices to render it inadmissible in court"), *cert. denied*, 401 U.S. 994 (1971).

The California Supreme Court recently held that the *Kelly-Frye* rule of "general acceptance" was not required for admission of a psychologist's expert testimony that a particular defendant did not display the character traits of "deviance or abnormality." People v. Stoll, 46 Crim. L. Rep. (BNA) 1300 (Cal. S. Ct. Jan. 10, 1990). This evidence was offered to prove the defendant had no predisposition to commit the charged acts of lewd and lascivious conduct against seven young boys. The court noted that the tests the expert relied on "were not made to appear foolproof," and "this process is a learned professional art," rather than a supposed exact science. Since juries would not mistake such opinions based upon personality tests "as a source of infallible truth," and since the expert himself carefully qualified his testimony, the court held that such "character" evidence should not be subject to the rigorous admissibility procedures applicable to experimental "scientific" evidence. *Id.* at 1301.

200. *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 212-13 (1983) (Saltzburg's comments); *see also* 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[03]. Judge Weinstein and Professor Berger write that "[s]ome scientific evidence merely guides the jury in making its own assessment of the evidence; in other instances, the jury may be incapable of estimating the accuracy of the expert's conclusion by reference to the data on which the expert relies." *Id.*

201. *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 214 (1983) (Saltzburg's comments).

impression. Consequently, they have a reasonable basis for accepting or rejecting the expertise.[202] Expert testimony on a subject like DNA, however, is wholly beyond the scientific competence of the average juror. Because the theory and technique are complex, the jurors can not make any kind of competent comparison of the molecular structure of the unknown sample and the known sample. That is not to say that scientific complexity is an adequate basis for exclusion of evidence, merely that a court should be aware of this factor and address the concern. In *Andrews v. State*, the court stated that although DNA testing evidence was "highly technical, incapable of observation and requires the jury to either accept or reject the scientist's conclusion that it can be done,"[203] this scientific technique was reliable, and thus properly performed tests results were admissible.

A fourth consideration is whether the evidence is peripheral or central to the major issues in the trial. In some instances, such as DNA analysis or fingerprint comparisons, the evidence is so central to a contested issue—identity—that the testimony, if believed by the trier of fact, may well be dispositive of the case. The more central to the material issues and the more dispositive the expert testimony is, the greater the need for judicial scrutiny in determining its reliability.[204] Since the jury may be resting its entire verdict on a particular piece of evidence, the jurisprudential value of the verdict is directly correlated to the value of the expert opinion.

This "peripheral/central" dichotomy is, however, a paradoxical one since the judicial decision to exclude novel expertise may resolve the lawsuit entirely. For example, in a rape case, DNA evidence might be the *only* way to prove the attacker's identity. The government will automatically lose the case if the DNA evidence is excluded. On the other hand, the DNA testimony will not automatically win the case if the evidence is admitted, since cross-examination, opposing expert testimony, and attacks on the expert's credibility may lead the jury to reject the findings.[205] Here, the expert

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202. For a thorough discussion of the scientific procedures involved in bitemark comparisons as well as a compilation of judicial decisions and scholarly secondary sources on odontology, see State v. Sager, 600 S.W.2d 541, 561-73, 578-79 (Mo. App. 1980).

203. Andrews v. State, 533 So. 2d 841, 850 (Fla. Dist. Ct. 1988).

204. *See* McCord, *supra* note 45, at 101.

205. For a contrary view, see Comment, *Voice Spectrogram Analysis: A Case of False Elimination*, 1980 ARIZ. ST. L.J. 217, 234. The author suggests:

If the only evidence available concerning the identity of a speaker is a spectrogram, and if

evidence goes to the very heart of the case and thus has immense probative value. The same is true for defensive issues. For example, if the government's entire case rests upon the testimony of a single eyewitness, the jurisprudential "cost" of excluding a defense expert on the reliability of eyewitness identifications is enormous. Thus, when expert testimony is central to a lawsuit, the "need" for this evidence increases but so does the "need" for the scientific reliability of that crucial evidence. In this situation the trial judge's dilemma is most acute. His ruling must be carefully crafted to ensure that all relevant, reliable evidence is considered by the fact-finder, and that it is presented in such a fashion that the jury will not over-value it.[206]

In other situations expert evidence, while helpful, is not essential. For example, an expert in spectrographic voice analysis might testify that he has scientifically determined that it is the defendant's voice on a certain tape recording. However, the jury can make its own comparison between a tape recording and a defendant's known voice sample.[207] Although this type of expert evidence may be unreliable it is not indispensable. The exclusion of this type of expert evidence has less impact since alternate means of proof exist.

A fifth consideration is whether the expert testimony involves an admittedly subjective interpretation or whether the opinion is purportedly objective. A jury that understands that the expert is speak-

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the crime alleged consists entirely in the speaking itself, the court should exclude the evidence, since the spectrogram would be the only evidence presented and would point conclusively to guilt or innocence in that case. Such a case would make the spectrogram more than a tool for identification, since the case would turn on that alone.

Id. If this logic were followed to its natural conclusion, however, a trial judge could prevent a single eyewitness from testifying if her identification were uncertain or if she suffered from some testimonial defect which might affect the accuracy of her identification. Historically, this uncertainity has been considered a factual issue of credibility for the jury to resolve, not a legal issue for the judge to resolve.

206. *See, e.g.*, United States v. Ridling, 350 F. Supp. 90, 95-97 (E.D. Mich. 1972) (polygraph testing highly probative in perjury trial). The court noted that courts should prevent use of "over-impressive" scientific evidence which has marginal utility to the trial's truth-seeking mission. *Id.* at 95. When such evidence has great probative value to major issues, however, courts should attempt to accommodate developing scientific areas by appointing court experts. *Id.* at 96-97.

207. On the other hand, the jury can visually compare the spectrogram from the defendant with the unknown sample, thus making the expert's evaluation subject to their own direct confirmation or refutation. This possibility of independent verification leans in favor of admitting spectrographic analysis. *See* United States v. Williams, 583 F.2d 1194, 1199 (2d Cir. 1978) (spectrographic voice analysis evidence not per se excludable), *cert. denied*, 439 U.S. 1117 (1979).

ing of his subjective conclusions and opinions is much less likely to be overwhelmed by that professional's opinion than by the expert who presents an opinion which the profession appears to accept.[208]

A sixth consideration is whether the expert is testifying as a generalist educator or offering specific data. Because the educator-expert is not crucial to the proper resolution of the case, the probative value of his testimony is relatively low. Precisely for this reason the likelihood of unfair prejudice is also low since he does not play a central role in determining the disputed issues.

Under rule 702, an expert may testify either "in the form of an opinion or *otherwise*."[209] As noted in the Advisory Committee's Note to rule 702 "it seems wise to recognize that opinions are not indispensable and to encourage the use of expert testimony in nonopinion form when counsel believes the trier can itself draw the requisite inference."[210] The "teacher" expert, when offering insight into the understanding of the historical facts of a particular case, normally testifies in general terms rather than giving an opinion about the particular case.[211] His testimony speaks to the generalities of the particular field, not to the specific conduct, facts, or inferences in the case.[212] His role

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208. *But see* 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702 [03] (opinions based on subjective analysis less probative because may be difficult to determine expert's skill in formulating judgment from scientific data).

209. FED. R. EVID. 702 (emphasis added).

210. FED. R. EVID. 702 advisory committee's note.

211. *See, e.g.*, United States v. Daly, 842 F.2d 1380, 1388-89 (2d Cir. 1988); People v. Hampton, 746 P.2d 947, 949-52 (Colo. 1987) (expert testimony on rape trauma syndrome admissible because limited in scope and concerned rape victims' reactions in general); State v. Ogle, 668 S.W.2d 138, 139-40, 142 (Mo. App. 1984) (expert testimony that rape victims generally experience psychological damage admissible when elicited by prosecution on cross-examination of defense physician), *cert. denied*, 469 U.S. 845 (1984).

212. *See* State v. Hennum, 441 N.W.2d 793, 799 (Minn. 1989) (general description of battered women's syndrome permitted). In *Hennum*, the court outlined limits of "educator" expert testimony. Initially, the expert may describe:

> the general syndrome and the characteristics which are present in an individual suffering from the syndrome. The expert should not be allowed to testify as to the ultimate fact that the particular defendant actually suffers from battered woman syndrome. This determination must be left to the trier of fact. Each side may present witnesses who may testify to characteristics possessed by the defendant which are consistent with those found in someone suffering from battered woman syndrome. This restriction will remove the need for a compelled adverse medical examination of the defendant. Since the expert will only be allowed to testify as to the general nature of battered woman syndrome, neither side need conduct an examination of the defendant.

Id. at 799; *see also* People v. McDonald, 690 P.2d 709, 719 (Cal. 1984). In *McDonald*, the court discussed the distinction between the stricter limitations upon expert testimony when the

is to put the factfinder in a better position to understand the significance of the historical facts adduced at the trial, not to interpret these historical facts.

Numerous cases have held that this generalized expert testimony in behavioral science fields, especially psychology, may be admissible at a lower threshold of general scientific acceptance precisely because of its generality.[213] For example, in *Kirkpatrick v. State*,[214] the Dallas Court of Appeals held that an expert psychologist could testify to the general behavioral traits of child abuse victims such as delay in reporting the incident, recantation, truancy, embarrassment, running away from home, and inconsistent versions of the event.[215] Without explanation by one who is familiar with abused children, this behavior might be attributed to the child's inaccuracy or falsification.[216] Thus, the court held that this expert educational testimony as to the general class characteristics was helpful to the jury and did not "unfairly prejudice the defendant."[217] However, "[o]nce the jurors possess the same enlightening information as the expert witness, and can more fully understand the matter at hand, further expert testimony is unnecessary and inadmissible."[218] In *Kirkpatrick*, the expert psychologist went well beyond testifying as to the general class characteristics of child abuse victims and essentially gave an expert opinion that the particular child had been abused, that she could not have fooled the expert with her story, and that she was telling about an actual experi-

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witness gives his opinion as opposed to a much broader leeway to relate facts such as research findings, data, and discussions of professional literature within his knowledge as an expert. *Id.*

213. *See, e.g.*, State v. Bachman, 446 N.W.2d 271, 277 (S.D. 1989) (expert testimony on rape trauma syndrome satisfied *Frye* test because generalized and offered to inform jury of characteristics displayed by sexually abused).

214. 747 S.W.2d 833, 835-36 (Tex. App.—Dallas 1987, pet. ref'd).

215. *Id.* at 835.

216. *Id.* at 835-36.

217. *Id.*

218. *Id.*; *see also* Commonwealth v. Rose, 725 S.W.2d 588, 590-91 (Ky. 1987), *cert. denied*, 484 U.S. 838 (1988). In *Rose*, the court held that a registered nurse could give expert testimony on the existence of the Battered Woman Syndrome and a general explanation as to why a person suffering from the syndrome would not leave her mate. However, the expert was not entitled to express his opinion and conclusions that the particular defendant was a person suffering from the battered woman syndrome or explain her state of mind as one of self-defense at the moment she pulled the trigger. This testimony was properly excluded because: 1) the witness was a nurse, not a psychiatrist; and 2) "the offer of testimony extended beyond a professional opinion regarding the accused's mental condition to the ultimate question of the accused's state of mind at the time of the act, decisive of her guilt or innocence." *Id* at 591.

ence.[219] The court noted that the expert was acting as a human polygraph[220] and was impermissibly expressing her opinion as to the credibility of the child.[221]

Thus, the general class characteristics of a particular psychological syndrome might be admissible to educate the jury and provide new insight into disputed issues. Nevertheless, the educating expert should not testify as to whether the particular person has been the victim of a crime or whether the witness is telling the truth about an event.[222] By giving such specific testimony the the expert threatens to supplant the jury in evaluating the credibility of witnesses.[223] The jury's task is assessing the credibility of the witness, and expert opinion will not necessarily assist in this task.[224]

This issue of "vouching for the credibility of a witness" has, however, sometimes led courts into unnecessary reversals.[225] There are three broad areas in which an expert witness properly may play some part in relation to the credibility of a witness. The first instance is when a witness' truth-telling abilities or competency may be affected

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219. 747 S.W.2d 833, 837 (Tex. App.-Dallas 1987, pet. ref'd).

220. *Id.*

221. *Id.* at 838-39.

222. *See* People v. Coleman, 768 P.2d 32, 49 (Cal. 1989). The *Coleman* court recognized the propriety of introducing evidence on Rape Trauma Syndrome " 'to provide the jury with recent findings of professional research on the subject of a victim's reaction to sexual assault' . . . but such evidence is 'limited to discussions of victims as a class, supported by references to literature and experience (such as an expert normally relies upon) and does not extend to discussion and diagnosis of the witness in the case at hand.' " *Id.*; *see also* Shaw v. State, 764 S.W.2d 815, 820 (Tex. App.—Fort Worth 1988, pet. ref'd) (rape center counselor properly permitted to testify that victim's conduct after incident was consistent with having been subject to "power rape"). In *Shaw*, the court wrote that the trial court should have prevented the rape counseling expert from testifying in a manner that indicated that the victim had been raped or that the defendant was the rapist. The court concluded, however, that the error was harmless because the jury was "continually reminded" that the expert could not testify to those facts. *Id.*

223. For a particularly lengthy discussion of the appropriate role of expert testimony relating to child sexual abuse victims, as well as a compendium of scholarly secondary sources and out-of-state appellate decisions on this type of expertise see State v. Rimmasch, 775 P.2d 388 (Utah 1989).

224. *See* United States v. Azure, 801 F.2d 336, 339 (8th Cir. 1986) (rule 702 prohibits direct expert opinion that child victim of sexual abuse is telling the truth); United States v. Barnard, 490 F.2d 907, 912 (9th Cir. 1973) (trial court properly excluded defendant's psychiatric testimony that government's witness was "a lying sociopath"), *cert. denied*, 416 U.S. 959 (1974).

225. For a collection of appellate decisions either admitting or excluding expert testimony on credibility issues as well as a discussion of the proper basis for such expert testimony, see Feeney, *supra* note 178.

in some scientifically measurable way. For example, an expert would be permitted to testify that Miss X, an alleged rape victim, had suffered such trauma from the event that she had become an alcoholic and at the time of trial and was incapable of accurately remembering events of even a week ago.[226] As the Georgia Supreme Court has noted:

> Generally, expert testimony as to the credibility of a witness is admissible if the subject matter involves organic or mental disorders, such as insanity, hallucinations, nymphomania, retrograde amnesia, and testimony concerning physical maladies which tend to impair mental or physical faculties. If, however, the characteristic attacked does not involve some organic or mental disorder or some impairment of the mental or physical faculties by injury, disease, or otherwise, expert testimony is usually excluded.[227]

Another way in which an expert may touch upon the credibility of a witness is by explaining the capacity of that witness, or that class of witnesses, to testify accurately.[228] This issue often arises in child abuse prosecutions. Jurors are frequently skeptical of the truthtelling capabilities of a four or five year old.[229] Thus, an expert could be helpful in explaining to the jury how psychologists or other child specialists can determine if children as a class, or one child in particular, can distinguish fantasy from reality and truth from falsehood.[230] The expert does not vouch for the credibility of the witness' testimony; he

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226. *See* C. MCCORMICK, *supra* note 28, § 45.

227. Jones v. State, 208 S.E.2d 850, 853 (Ga. 1974).

228. *See generally* McCord, *supra* note 50, at 64-66.

229. *See* McCord, *Admissibility of Psychological Evidence*, *supra* note 50, at 45-46 (citing survey studies showing majority of jurors believe children cannot provide accurate testimony, indicating " 'a general bias against children's credibility as witnesses' ") (quoting Goodman, Golding & Haith, *Jurors' Reactions to Child Witnesses*, 40 J. SOC. ISSUES 139, 142 (1984)).

230. *See* State v. Roberts, 677 P.2d 280, 287 (Ariz. App. 1983) (opinion offered by defendant that child victim had defective memory and could understand only simple questions admissible); Commonwealth v. Carter, 417 N.E.2d 438, 439 (Mass. 1981) (opinion concerning child victim's "reality testing" and ability to "differentiate what is real from what isn't real" properly admitted); Farris v. State, 643 S.W.2d 594, 697 (Tex. Crim. App. 1982) (state psychiatrist could not testify to likelihood of nine-year-old child fantasizing sado-masochistic sexual assaults in absence of "vigorous cross-examination which tended to undermine" child's testimony); *cf.* United States v. Binder, 769 F.2d 595, 602 (9th Cir. 1985) (error to admit testimony that child victims were able to distinguish reality from fantasy because improperly bolstered credibility). Judge Wallace, dissenting in *Binder*, wrote:

> In this case, the experts testified only that the children were *capable* of telling the truth—they did not opine as to whether or not the children *actually had done so*. The difference between knowing a witness can tell the truth and concluding that he did not do so is

only assesses the general ability of the witness to recognize and speak the truth.[231] His testimony is analogous to that of the traditional character witness who vouches for another witness' general reputation in the community for truthtelling.[232] While an expert witness may have no *greater* ability to attest to another's general character for truthfulness, he surely has no lesser ability either.

A third way in which an expert's testimony might affect the credibility of another witness is when the expert's testimony inevitably enhances or detracts from the credibility of a specific witness, but he does not "vouch" for the witness' truthfulness or accuracy.[233] For example, in a child sexual assault case, an expert psychologist might testify to the traits and characteristics of sexually abused children as a general class. The expert might then describe whatever traits and characteristics she had personally observed or discovered in examining the alleged victim in a particular case.[234] Here the expert wears two hats: first as an educator, secondly as a fact witness testifying from personal knowledge and experience as any lay witness does.[235]

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fundamental. Thus, the jury was free to believe or disbelieve the children's testimony, and in my judgment, the expert testimony neither helped nor hindered that determination.

Id. at 605 (Wallace, J., dissenting). *See generally* McCord, *supra* note 50, at 64-66 (prosecutors rarely use child behavioral scientists to explain capacity of child at particular age and mental development).

231. United States v. Binder, 769 F.2d 595, 605 (9th Cir. 1985) (Wallace, J., concurring & dissenting) ("the experts testified only that the children were *capable* of telling the truth—they did not opine as to whether or not the children *actually had done so*") (emphasis in original).

232. *See* FED. R. EVID. 405 and 608.

233. *See infra* note 235.

234. *See, e.g.*, United States v. St. Pierre, 812 F.2d 417, 419 (8th Cir. 1987); United States v. Hill, 655 F.2d 512, 516 (3d Cir. 1981) (court improperly excluded psychologist's testimony of tests and profiles compiled from personal examination of defendant); Kirkpatrick v. State, 747 S.W.2d 833, 838 (Tex. App.—Dallas 1987, pet. ref'd).

235. *See St. Pierre*, 812 F.2d at 419; *cf.* United States v. Azure, 801 F.2d 336, 339-41 (8th Cir. 1986) (reversed because testimony of government's expert went beyond proper scope). The *Azure* court noted that the pediatrician and expert on child abuse:

> might have aided the jurors without usurping their exclusive functions by generally testifying about a child's ability to separate truth from fantasy, by summarizing the medical evidence and expressing his opinion as to whether it was consistent with [the child's] story that she was sexually abused, or perhaps by discussing various patterns of consistency in the stories of child sexual abuse victims and comparing those patterns with patterns in [the child's] story. However, by going further and putting his stamp of believability on [her] entire story, [the expert] essentially told the jury that [she] was truthful in saying that Azure was the person who sexually abused her. No reliable test for truthfulness exists and [the expert] was not qualified to judge the truthfulness of that part of [the child's] story.

Obviously this testimony enhances the credibility of the child, but any evidence that corroborates the testimony of a witness enhances that witness' credibility. This fact, by itself, does not make the corroborating evidence inadmissible.[236] However, in this "soft science" subjective area of psychology the expert may *not* express an expert opinion as to whether: 1) she thought the victim was telling the truth; 2) she thought the offense had actually occurred; or 3) she thought the defendant had committed the crime alleged.[237] Further, the trial judge should carefully regulate such expert testimony because, if uncontrolled, the "educational" expert may have the over-all effect of providing the sponsoring party "with an additional summation by having the expert interpret the evidence."[238] The modern trend under rule 702 is to admit expert "educational" testimony at a relatively low threshold of scientific reliability limited by the condition that the expert may not particularize his opinion in terms of any actual witness at trial.[239]

After the trial judge identifies all of the relevant factors— "soft" or "hard" science, tentative or conclusive result, common sense or esoteric area, peripheral or central issue, educator or specific data expertise—and determines the degree of scientific reliability needed for a specfic area of expertise, he must then determine whether the evidence

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Azure, 801 F.2d. at 340-41.

236. State v. Middleton, 657 P.2d 1215, 1219 (Or. 1983).

237. *See St. Pierre*, 812 F.2d at 419; *see also* Key v. State, 765 S.W.2d 848, 850-51 (Tex. App.—Dallas 1989, pet. ref'd). In *State v. Woodburn*, for example, the defendant attempted to offer a clinical psychologist's testimony that after examining a child sexual abuse victim 24 times, he concluded that the child lied on a number of occasions and had an "inability to distinguish truth from falsehood." 559 A.2d 343, 345 (Me. 1989). The court held that the psychologist's opinion was properly excluded because it dealt with the ultimate issue as to the truthfulness of the child's testimony and that his testimony "demonstrated no scientifically accepted basis for determining that the child was unable to distinguish truth from falsehood." *Id.* at 345-46. The court may have used loose language in excluding the testimony "on the ultimate issue" which is no longer a valid objection under federal rule 704.

238. United States v. Nersesian, 824 F.2d 1294, 1307-08 (2d Cir. 1987), *cert. denied sub nom.*, Annabi v. United States, 484 U.S. 1061 (1988). In *Nersesian*, the court permitted the DEA agent to read an English translation of voluminous tape recordings relating to various narcotics-related telephone conversations and then testify to the "hidden meaning" of innocent sounding conversations. The court warned, however, that giving an opinion that the particular defendant *was* selling heroin or the conversation *was* related to heroin "may come dangerously close to usurping jury's function." *Id.*

239. *See* State v. Chapple, 660 P.2d 1208 (Ariz. 1983) (en banc) (permitting testimony on unreliability of eyewitness identifications); People v. McDonald, 690 P.2d 709, 715-19 (Cal. 1984) (en banc); *see also supra* notes 214, 218 & 222.

meets that level of reliability. Thus, the focus shifts to whether the proponent has met the appropriate burden of proof in demonstrating sufficient scientific reliability in a particular instance.[240]

How great a showing should the proponent of the expertise be required to make as to the reliability of the expertise offered in a specific case? While some courts have held that the proponent of such novel expertise should be held to a standard of "clear and convincing proof,"[241] this is neither mandated nor sanctioned by the Federal Rules of Evidence. Instead, the reliability of the general technique, system, or methodology that the expert employed is governed by rule 104(a),[242] the general "preponderance of the evidence" standard governing the admissibility of all evidence.[243]

Professor Imwinkelried, on the other hand, suggests that currently rule 901(b)(9)[244] embodies the applicable burden of proof standard.[245]

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240. *See* United States v. Gwaltney, 790 F.2d 1378, 1382 (9th Cir. 1986) (when novel scientific technique has not gained general judicial recognition, proponent must lay proper foundation " 'showing the underlying scientific basis and reliability of the expert's testimony' ") (quoting United States v. Marshall, 526 F.2d 1349, 1360 (9th Cir. 1975)), *cert. denied*, 426 U.S. 923 (1976)).

241. Zani v. State, 758 S.W.2d 233, 243 (Tex. Crim. App. 1988); State v. Hurd, 432 A.2d 86, 97 (N.J. 1981).

242. FED. R. EVID. 104(a) reads:

> (a) Questions of admissibility generally. Preliminary questions concerning the qualifications 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.

243. The Supreme Court has interpreted rule 104(a) to require proof by a preponderance of evidence. Huddleston v. United States, 485 U.S. 681, 687 n.5 (1988); Bourjaily v. United States, 483 U.S. 171, 175 (1987); Lego v. Twomey, 404 U.S. 477, 486-87 (1972).

This standard has been criticized by Professor Saltzburg who posits that the proper standard of proof in preliminary questions should vary depending on whether the rule of evidence relates to the reliability of the evidence or some other social policy concerns such as the marital privilege. Saltzburg, *Standards of Proof and Preliminary Questions of Fact*, 27 STAN. L. REV. 271, 290-92 (1975). Saltzburg's view, however, has been rejected by the Supreme Court and most federal circuits. As Chief Justice Rehnquist stated in *Bourjaily*:

> Evidence is placed before the jury when it satisfies the technical requirements of the evidentiary Rules, which embody certain legal and policy determinations. The inquiry made by a court concerned with these matters is not whether the proponent of the evidence wins or loses his case on the merits, but whether the evidentiary Rules have been satisfied. Thus, the evidentiary standard is unrelated to the burden of proof on the substantive issues, be it a criminal case . . . or a civil case.

Bourjaily, 483 U.S. at 175.

244. FED. R. EVID. 901(b) (9) reads: "Process or system. Evidence describing a process or system used to produce a result and showing that the process or system produces an accurate result." *Id.*; *See* Imwinkelried, *Judge Versus Jury*, *supra* note 29, at 598-600 (discussing

This rule requires authentication of the system only by "evidence sufficient to support a finding."[246] This is the same very liberal standard[247] as required for conditional relevancy determinations under rule 104(b).[248] Because rule 901(b)(9) sets such a low threshold, Professor Imwinkelried advocates a change in the federal rules so that the judge would determine the scientific validity of a theory or principle rather than the jury.[249] In *United States v. Downing*,[250] the Third Circuit court of appeals pointed out, however, that the issue under rule 901(b)(9) is authentication, or whether the system or process works as intended and whether it produced an accurate result.[251] Thus, the accuracy of a particular "voiceprint" test will depend upon whether the voice spectrographic instrument was working accurately at the time of the test.[252] Additionally, the "voiceprint" sheet must be shown to be the same one that was produced from that instrument on that date.[253] These are issues to be resolved by a prima facie finding sufficient to support a finding under rule 901(b)(9).[254] However, no evidence regarding this specific test result on this specific instrument will be admissible unless the principle or theory underlying the testing

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applicability of rule 901 authentication requirement to admission of novel scientific expertise, but advocating a change in federal rules as consequence).

245. Imwinkelried, *Judge Versus Jury*, *supra* note 29, at 598.

246. FED. R. EVID. 901(a).

247. *See* Huddleston v. United States, 485 U.S. 681, 690-91 (1988) (if juror could reasonably conclude that defendant committed extraneous offense from "some evidence" then evidence of offense is conditionally relevant under rule 104(b) and, if otherwise admissible, judge may not exclude it); *see also* C. WRIGHT & K. GRAHAM, FEDERAL PRACTICE AND PROCEDURE § 5054 (1977) (judge can decide preliminary fact against proponent if unreasonable for jury to find preliminary fact exists).

248. FED. R. EVID. 104(b) reads: "(b) Relevancy Conditioned on Fact. When the relevancy of evidence depends upon the fulfillment of a condition of fact, the court shall admit it upon, or subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition."

249. Imwinkelried, *Judge Versus Jury*, *supra* note 29, at 599-600 (jury should determine validity of theory or principle underlying evidence, but judge should determine validity).

250. 753 F.2d 1224 (3d Cir. 1985).

251. United States v. Downing, 753 F.2d 1224, 1240 n.21 (3d Cir. 1985).

252. *See* E. IMWINKELRIED, EVIDENTIARY FOUNDATIONS 81 (2d ed. 1989) (evidentiary foundations for admission of scientific evidence); 5 D. LOUISELL & C. MUELLER, FEDERAL EVIDENCE § 522, at 141-48 (1981) (authentication requirements of system or process under FED. R. EVID. 901(b)(9)); *see also* United States v. Williams, 583 F.2d 1194, 1198-2000 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979) (discussing standards for admissibility of "voiceprints").

253. *Id.*

254. 5 D. LOUISELL & C. MUELLER, *supra* note 29, § 506, at 24; 5 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE ¶ 901(a)[01] (1986).

process is sufficiently reliable to be admissible.[255] The admissibility or competency of evidence is governed by rule 104(a).[256] This standard also governs the admission of hearsay, which, like novel expertise, raises reliability concerns.[257]

After the trial judge has determined: (1) that an expert might assist the jury; (2) that the field about which the expert proposes to testify is sufficiently reliable to be a proper subject for expert testimony in some instances; and (3) that the specific expertise offered is sufficiently reliable for the purpose it is offered considering the manner in which it is offered, the next step is to determine if the particular expert is qualified to testify about the subject. This inquiry focuses upon the background and experience of the witness in a particular field. Just as an expert's testimony must "fit" the disputed issues at trial, so must his experience "fit" the testimony offered.

The level of professional competence required frequently depends upon the type of expertise involved. For example, a police officer with only a high school diploma and a few years experience may be highly qualified to testify to the use of codes and beepers used by narcotics dealers.[258] The expert must merely possess some specialized knowledge sufficiently beyond the jury's knowledge to provide aid to them. The general rule, set forth in the Texas case of *Holloway v. State* provides:[259]

> The special knowledge which qualifies a witness to give an expert

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255. *See* United States v. Kozminski, 821 F.2d 1186, 1194 (6th Cir. 1987) (issues of admissibility of expert testimony under rule 702 are preliminary questions under evidence Rule 104(a)), *aff'd* in *part*, 487 U.S. 931 (1988).

256. *See Rules for Admissibility of Scientific Evidence*, 115 F.R.D. 79, 113 (1987) (Spaeth's proposal) (rule 702 is rule of competence).

257. *See* Ohio v. Roberts, 448 U.S. 56, 65-74 (1980) (reliability central conern of hearsay rule); United States v. Downing, 753 F.2d 1224, 1240 nn. 15 & 21 (3d Cir. 1985) (trustworthiness and reliability underlie admission of scientific evidence).

258. *E.g.*, United States v. Ginsberg, 758 F.2d 823, 830 (2d Cir. 1985); *see also* United States v. Maher, 645 F.2d 780, 783-84 (9th Cir. 1981) (DEA agent qualifies as expert on modus operandi of persons conducting countersurveillance while transporting drugs); United States v. Sellaro, 514 F.2d 114, 118-19 (8th Cir. 1973) (FBI agent qualifies as expert on modus operandi of bookmakers and may define meaning of various bookmaker terms), *cert. denied*, 421 U.S. 1013 (1975).

259. 613 S.W.2d 497 (Tex. Crim. App. 1981); *see also* Jenkins v. United States, 307 F.2d 637, 644 (D.C. Cir. 1962) (en banc) (psychologist not automatically disqualified because lacking medical degree and has lesser degree of patient responsibility; critical factors are actual witness experience and opinion's probative value). *See generally* 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[04]. Recurring questions regarding qualifications of experts include: whether practical experience rather than education may be sufficient, and vice-versa, amount

> opinion may be derived entirely from a study of technical works, or specialized education, or practical experience or varying combinations thereof; what is determinative is that his answers indicate to the trial court that he possesses knowledge which will assist the jury in making inferences regarding fact issues more effectively than the jury could do so unaided.[260]

Several factors should be considered when determining whether specialized knowledge qualifies the witness as an expert. First, as a general proposition, the degree of experience, education, or training that a person must have to qualify as an expert witness depends on the complexity of the scientific field. When the evidence is close to the jury's common understanding or education, the witness' qualifications are less important than when the evidence is entirely foreign to them. Second, the more conclusive or particularized the expert's testimony, the more important that his credentials are sufficient to permit a specific opinion. Third, the more "exact" the findings or conclusion, the more important the degree of expertise. Thus, the need for a highly qualified expert increases along the spectrum from generalized to particularized expert testimony, from "soft" to "hard" sciences, from background information to a specific opinion on a central disputed issue, and from an opinion which is admittedly subjective and inconclusive to one that is objective and determinative of a central issue. Thus a social worker might be qualified to testify about the general characteristics of "the battered woman syndrome,"[261] or "rape trauma syndrome."[262] Conversely, only an experienced odontologist or dentist could testify that the defendant's teeth made the bitemark found on a murder victim.[263]

Once a trial judge has determined that a qualified expert in a scientifically reliable field is likely to assist a jury in resolving a disputed issue, the judge must ensure that the testimony will not violate the requirements of any other evidentiary rule. One area in which this

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of training necessary, degree of specific knowledge required, familiarity with local conditions and whether expert had requisite expertise at relevant time. *Id.*

260. Holloway v. State, 613 S.W.2d 497, 501 (Tex. Crim. App. 1981).

261. Fennell v. Goolsby, 630 F. Supp. 451, 458 (E.D. Pa. 1985) (unclear whether witness had formal training in clinical psychology, but testimony that as supervisor at marital abuse project she had aided over 2,500 people qualified her as expert on battered women).

262. People v. Hampton, 746 P.2d 947, 949-52 (Colo. 1987).

263. *E.g.*, Niehaus v. State, 359 N.E.2d 513 (Ind. 1977), *cert. denied*, 434 U.S. 902 (1977); State v. Sager, 600 S.W.2d 541, 569 (Mo. App. 1980).

question has been prevalent is that of forbidden character evidence—"profile" evidence, which is testimony concerning characteristics common to some "criminal" type. While the Supreme Court recently upheld admission of expert testimony on a "drug courier profile" offered to prove that an officer had reasonable suspicion to stop and question a particular person,[264] profile evidence should not be admissible as substantive evidence of guilt.[265]

For example, evidence which shows that the defendant in a child sexual assault case has personality traits that "match" those of a pedophile does have some probative value and logical relevance. Nevertheless, as a matter of public policy, American trials are conducted solely on the basis of the charged event, not on the basis of the defendant's personality type.[266] Exclusion of this character evidence is based on its unfair prejudicial effect rather than its lack of probative value and is specifically prohibited by rule 404(a)(1).[267] Such profile evidence is irrelevant except for the impermissible purpose of showing a defendant has the character propensity to commit a specific crime because his background or personality matches that of a typical perpe-

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264. United States v. Sokolow, __U.S.__, 109 S.Ct. 1581, 104 L. Ed. 2d 1 (1989).

265. *See, e.g.*, United States v. Quigley, 890 F.2d 1019, 1023-24 (8th Cir. 1989) (profile improperly admitted as substantive evidence of guilt, harmless error); United States v. Gillespie, 852 F.2d 475, 479 (9th Cir. 1988) (clinical psychologist's testimony on "characteristics common to child molesters" inadmissible since defendant's testimony about childhood did not put character in issue); United States v. Hernandez-Cuartas, 717 F.2d 552, 555 (11th Cir. 1983) (profile proper to give reasonable suspicion for arrest, not to prove guilt); Francis v. State, 512 So. 2d 280 (Fla. Dist. Ct. App. 1987) (character evidence that defendant had personality characteristic of being attracted to children not admissible to prove conforming conduct unless offered by accused or by prosecution to rebut); State v. Hester, 760 P.2d 27 (Idaho 1987) (prosecution's expert testimony that defendant had character traits consistent with those of known child abusers inadmissible when only reason for offering testimony was as propensity evidence); State v. Percy, 507 A.2d 955, 960-61 (Vt. 1986) (expert not permitted to testify to general profile of rapists because jury could conclude defendant was guilty because he "fit the mold"); State v. Maule, 667 P.2d 96, 99-100 (Wash. App. 1983) (improper to admit child abuser "profile" evidence; when offered to show that since defendant shared group traits with those of child abusers he more likely committed crime).

266. As one appellate judge has quipped, "Our law makes some allowance for the possibility of reform, and does not yet say 'once a moonshiner, always a moonshiner.'" Baker v. United States, 227 F.2d 376, 378-79 (5th Cir. 1955) (Rivas, J., concurring).

267. FED. R. EVID. 404(a) (1) reads:

> (a) Character evidence generally. Evidence of a person's character or a trait of character is not admissible for the purpose of proving action in conformity therewith on a particular occasion, except:
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> (1) Character of accused. Evidence of a pertinent trait of character offered by an accused, or by the prosecution to rebut the same. . . .

trator of that type of crime.[268] The defendant is on trial for an alleged act, not for being a pedophile or a general criminal type. If, however, the defendant has put this character trait in issue himself, then the prosecution might be entitled to rebut it with expert "profile" evidence.[269]

On the other hand, should a defendant be entitled to offer expert testimony regarding a criminal "profile" in an effort to demonstrate that his character traits and background do *not* match that of the typical pattern? Most courts have answered that question negatively,[270] and noted that experts such as psychiatrists and psychologists are no more competent than a jury to assess the individual character of a person.[271] In one recent Texas decision, however, the

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268. United States v. Gillespie, 852 F.2d 475, 479-80 (9th Cir. 1988); *see also* Sanders v. State, 303 S.E.2d 13, 18 (Ga. 1983) (evidence that defendant has characteristics of "battering parent" inadmissible unless used to rebut defense of "battering parent syndrome" or character in issue); State v. Clements, 770 P.2d 447, 450-54 (Kan. 1989) (expert testimony discussing psychology of child sexual abusers and amenability to treatment inadmissible; implies defendant guilty because he "fit the mold"); Slayton v. State, 633 S.W.2d 934, 936 (Tex. App.—Fort Worth 1982, no pet.) (psychiatrist's testimony inadmissible to show defendant had personality traits that might cause him to expose himself to children). *But see* State v. Swallow, 350 N.W.2d 606, 609 (S.D. 1984) (upholding admission of expert testimony regarding characteristics of pedophilia).

269. *Sanders*, 303 S.E.2d at 18; *see also* United States v. Beltran-Rios, 878 F.2d 1208, 1211-13 (9th Cir. 1989) (use of witnesses to show defendant's innoncence based on his lifestyle opened door to rebuttal expert testimony that defendant fit drug courier profile although such evidence potentially dangerous).

270. United States v. St. Pierre, 812 F.2d 414, 420 (8th Cir. 1987) (court may refuse to appoint expert to determine if defendant fits sexual offender profile; scientific community not shown to recognize existence of identifiable traits common to rapists); State v. Fitzgerald, 382 N.W.2d 892, 894-95 (Minn. App. 1986) (defendant not permitted to offer expert testimony on pedophilia to prove credibility); State v. Hall, 297 N.W.2d 80, 88 (Iowa 1980) (defense expert may discuss generally that defendant was not aggressive, impulsive, explosive, or prone to anger, but not allowed to state whether he could commit homicide); State v. Cavallo, 443 A.2d 1020, 1025-30 (N.J. 1982) (expert's proffered opinion that defendant did not fit behavioral mode of rapists was relevant as character opinion but too scientifically unreliable to be admissible). *But see* State v. Treadaway, 568 P.2d 1061, 1066 (Ariz. 1977) (expert testimony on defendant's capability of violence admissible under rule 405); People v. Stoll, 46 Crim. L. Rep. (BNA) 1300 (Cal. S. Ct. Jan. 10, 1990) (conviction for lewd and lascivious conduct reversed when trial court excluded psychologist's expert opinion that, based on personal interview and standardized personality tests, defendant displayed "no signs of deviance or abnormality;" such testimony relevant character evidence).

271. *See, e.g.*, United States v. Esch, 832 F.2d 531, 534-35 (10th Cir. 1987) (defense's clinical psychologist testimony that defendant had "dependent personality" and sexual values originated from rigid childhood experience inadmissible; generalized personality characteristics also inadmissible because not helpful), *cert. denied*, 485 U.S. 908 (1988); United States v. Felak, 831 F.2d 794, 797 (8th Cir. 1987) (psychiatrist's conclusion that defendant is like an

trial court did permit a psychiatrist to testify, apparently without objection, to character profile evidence.[272] In this indecency with a child trial, the psychiatrist testified that in his expert medical opinion the defendant's psychological profile was not typical of individuals who commit sexual crimes.[273] However, the defendant paid a high price for this evidence because it opened the door to testimony by two other victims who stated that the defendant had, over the course of seven years, sexually molested them as well.[274]

Conversely, expert testimony on the "modus operandi" of specific types of criminals, *e.g.* pimps,[275] pickpockets,[276] gamblers,[277] and drug distributors,[278] is admissible. This evidence points not to the character of a specific person but to the proper interpretation and context of outward behavior. For example, in *United States v. Angiulo*,[279] an FBI agent was properly permitted to testify as an expert on the structure and operations of "La Cosa Nostra."[280] Such experts may testify "concerning the particular methods and practice of those engaged in organized criminal activities."[281] In *Angiulo*, the FBI agent was also

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extremely religious individual of no assistance in deciding whether he willfully or knowingly evaded paying income tax); United States v. Webb, 625 F.2d 709, 710-11 (5th Cir. 1980) (expert witnesses' testimony that defendant was capable of violence not helpful under rule 702 because no new insight).

272. Townsend v. State, 776 S.W.2d 316, 317 (Tex. App.—Houston [14th Dist.] 1989, pet. ref'd).

273. *Id.* The psychiatrist, Dr. Fred Fason, went on to testify "that a child of 12 years of age could fantasize a sexual encounter, confuse fantasy with reality, and relate the fantasy as though it were factual." *Id.*

274. *Id.* at 317-18.

275. *See* United States v. Anderson, 851 F.2d 384, 392-94 (D.C. Cir. 1988) (admission of expert testimony on relationships between pimps and prostitutes harmless error), *cert. denied*, 488 U.S. 1012 (1989).

276. United States v. Jackson, 425 F.2d 574, 576-77 (D.C. Cir. 1970).

277. United States v. Scavo, 593 F.2d 837, 844 (8th Cir. 1979); United States v. Clements, 588 F.2d 1030, 1038 (5th Cir. 1979), *cert. denied*, 440 U.S. 982 (1979).

278. United States v. Dunn, 846 F.2d 761, 763 (D.C. Cir. 1988); United States v. Carson, 702 F.2d 351, 369 (2d Cir.), *cert. denied*, 462 U.S. 1108 (1983).

279. 847 F.2d 956 (1st Cir. 1988).

280. *Id* at 973-75.

281. *Id.* at 975. The FBI testimony in *United States v. Daly* presents a paradigm of the appropriate use of this type of background information expertise. 842 F.2d 1380, 1387-89 (2d Cir.), *cert. denied sub. nom.*, 488 U.S. 821 (1988). The trial involved alleged racketeering by members of the New York Gambino crime family. Agent Kossler, using charts and other visual aids, described the five different organized crime families that operated in the New York area and their requirements for membership. *Id.* at 1388. He discussed their rules of conduct, code of silence, and the meaning of their specialized jargon, and "described how, in general, organized crime has infiltrated labor unions." *Id.* Since the agent did not mention the defend-

permitted to give his opinion regarding the defendants' relationships with La Cosa Nostra.[282] The usefulness of modus operandi evidence to a jury's verdict is similar to an explanation of an umpire's hand motions to a baseball neophyte's determination of whether a runner is "safe" or "out." One is not examining whether the umpire has a good or bad "character" for making accurate calls, but rather interpreting the umpire's particular call. Thus, while pure character evidence is not subject to expert testimony, an expert may explain the significance of otherwise inexplicable or ambiguous behavior.[283]

Once the trial judge has determined that the five initial predicates of general admissibility of educational expertise have been fulfilled: 1) some expertise in this area would likely help a jury; 2) the area is sufficiently reliable to allow some expert testimony; 3) the expertise offered in the specific case is sufficiently reliable for the purpose it is being offered; 4) the witness is sufficiently qualified to offer his knowledge; and 5) the proffered testimony does not violate any other rule of evidence, the inquiry must shift to a more specific focus on the countervailing considerations of rule 403.

VI. COUNTERVAILING CONSIDERATIONS UNDER RULE 403

Expert testimony which would be admissible under rule 702 might nonetheless be excluded under the general balancing test of rule 403.[284] The factors considered under rule 403 are whether the probative value of the expert-educator's testimony is substantially outweighed by the danger of unfair prejudice,[285] whether the jury is

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ant or the specific facts in the case, any prejudice likely to be caused by his testimony would not outweigh its probative value. *Id.* at 1389.

282. *Angiulo*, 847 F.2d at 975.

283. *See* McCord, *supra* note 50, at 58-64 (detailing admissibility analysis for expert testimony to explain a child sexual abuse victim's "unusual" behavior).

284. United States v. Downing, 753 F.2d 1224, 1242 (3d Cir. 1985); *see also* FED. R. EVID. 403. 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." For a general discussion on methods that a trial court could employ to alleviate perceived prejudicial effects in the admission of scientific evidence, see Doyle, *Applying Lawyer's Expertise to Scientific Experts: Some Thoughts About Trial Court Analysis of the Prejudicial Effects of Admitting and Excluding Scientific Testimony*, 25 WM. & MARY L. REV. 619 (1984).

285. United States v. Solomon, 753 F.2d 1522, 1526 (9th Cir. 1985) (narcoanalysis evidence properly excluded because prejudicial effect outweighed probative value); United States

misled or the issues are confused,[286] or whether there is undue delay, waste of time, or needless presentation of cumulative evidence.[287]

At this point, the judge must focus carefully upon the balance between probative value and the countervailing factors of rule 403.[288] Certainly all evidence offered by either the prosecution or defense is intended to prejudice the other side of the lawsuit. Only "unfair" prejudice, that which has "an undue tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional

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v. Green, 548 F.2d 1261, 1268 (6th Cir. 1977) (court should exclude expert testimony of drug's hallucinogenic properties in narcotics trial because more prejudicial than probative).

286. *E.g.*, United States v. Serna, 799 F.2d 842, 850 (2d Cir. 1986), *cert. denied sub nom.*, Cinnante v. United States, 481 U.S. 1013 (1987); United States v. De Luna, 763 F.2d 897, 912 (8th Cir.), *cert. denied*, 474 U.S. 980 (1985); United States v. Schmidt, 711 F.2d 595, 598-99 (5th Cir. 1983), *cert. denied*, 464 U.S. 1041 (1984).

287. Some courts and commentators have expressed grave doubts over a "battle of the experts" which would unduly prolong criminal trials if some or all of these "novel scientific evidence" experts are permitted to testify. *See, e.g.*, United States v. Thevis, 665 F.2d 616, 641 (5th Cir.) (danger of barrage of "marginally relevant psychological evidence"), *cert. denied*, 459 U.S. 825 (1982); State v. Cavallo, 443 A.2d 1020, 1025 (N.J. 1982). Certainly a trial court has discretion to limit the number of experts permitted "to do battle" or to limit the length and scope of their testimony. FED. R. EVID. 610. However, if an expert's testimony could assist the jury in reaching a correct and reliable decision the fact that it will also lengthen the trial is not a sufficiently compelling rationale to exclude *all* such experts and expertise. Indeed, it may be reversible error. *See* People v. McDonald, 690 P.2d 709, 725 & n.21 (Cal. 1984) (when novel expertise offered on crucial issue, not considered "undue" loss of time) (quoting State v. Chapple, 660 P. 2d 1208, 1222 (Ariz. 1984)).

288. The importance of rule 403 in determining the admissibility of novel expert evidence is highlighted by a proposed amendment to FED. R. EVID. 702 by Professor Margaret Berger in which she would add a second sentence to the rule:

> 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. *When the witness seeks to testify about a scientific principle or technique that has not previously been accorded judicial recognition, the testimony shall be admitted if the court determines that its probative value outweighs the dangers specified in Rule 403.*

Rules for Admissibility of Scientific Evidence, 115 F.R.D. 79, 89 (1987) (Berger's proposal). One drawback of this amendment is that it continues and fosters the debate surrounding whether a particular field is "scientific" or not. One might also question whether a single instance of "judicial recognition" should be accorded so much weight for future admissibility determinations. The primary virtue of Professor Berger's amendment is that it requires the proponent of novel scientific expertise to show that its probative value outweighs counterfactors, rather than requiring the opponent of the evidence to show that the rule 403 counterfactors substantially outweigh the probative value. This standard mandates a greater scrutiny of the expertise than does the McCormick test, but not as great as the *Frye* standard. It strikes an appropriate middle level.

one"[289] should be balanced against probative value.

The potential increase in unfair prejudice might depend upon whether the expert testimony points to the scene of the crime or to the defendant. For example, blood spatter analysis has recently become an accepted area for expert witness testimony and has generated little controversy in either the scientific or legal communities.[290] While the scientific theory and techniques employed in blood spatter analysis depend upon a subjective interpretation, the testimony deals with evidence which is inherently understandable.[291] More importantly, this evidence is found at the scene of a crime and tends to demonstrate how the crime was committed, the distance the attacker was from the victim, and the direction of the attack.[292] The evidence does not, however, suggest the specific identity of the attacker or place the defendant within the general "class" of possible perpetrators.[293] Thus, the potential for this "scene" expert evidence to prejudice a defendant unfairly is considerably lower than expert evidence such as spectrographic analysis, DNA analysis, and fingerprint analysis that directly connects a particular person to the crime.[294] Also, expert evidence that has "the effect of identifying a particular person as the guilty party, without the need for any other evidence,"[295] might pose the danger of having an overwhelming impact on the jury, while scientific tests dealing with the scene or victim do not.

Another potential source of unfair prejudice arises from the nature of the scientific field. Expert testimony relating to a scientific field

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289. FED. R. EVID. 403 advisory committee note.

290. *See* State v. Hall, 297 N.W.2d 80, 82-86 (Iowa 1980) (admitting expert testimony on blood pattern to show that the spattered blood on the defendant's clothing was indicative of victim's close proximity; technique close to layman's common knowlege), *cert. denied*, 450 U.S. 927 (1981); State v. Proctor, 767 P.2d 453, 454-55 (Or. App. 1989) (although expert used unorthodox method of collecting blood spatter, novelty of technique went to weight not admissibility). *See generally* A. MOENSSENS, & F. INBAU & J. STARRS, *supra* note 119, § 6.12. (breadth of blood stain analysis).

291. *Hall*, 297 N.W.2d at 86.

292. *Id.*

293. *See* A. MOENSSENS, F. INBAU & J. STARRS, *supra* note 119, § 1.03 (in criminal cases, when accused's freedom is jeopardized courts should be careful in admitting insufficiently tested or verified evidence that identifies accused as offender).

294. *See* Jones v. State, 716 S.W.2d 142, 151 (Tex. App.—Austin 1986, pet. ref'd) (distinguishing need for heightened scientific reliability when evidence may identify person as guilty party without other evidence). In *Jones*, the expertise showed the presence of an unusual concentration of succinylcholine in the victim's body and this, in itself, did not identify the defendant as the murderer. *Id.*

295. *Id.*

which is only in an emerging, experimental stage, might pose a greater potential for affecting a jury in an emotional sense if the jury is likely to conclude incorrectly that the scientific expertise is infallible. It is here that the bugaboo of juries trusting the "mystic infallibility" of scientists may have some legitimacy.

A second countervailing consideration is whether the proffered expert testimony is likely to mislead the jury or confuse the issues.[296] In this area appellate courts have frequently wrongfully announced blanket rules excluding a specific category of expertise.[297] First, *any* particular result reached in a specific trial under a rule 403 balancing is of virtually no precedential value to another trial.[298] Thus, appellate courts ought never rule that a particular category of novel evidence will mislead a hypothetical future jury. Second, rule 403 rulings, by their very nature, require the individual trial judge's discretion regarding a particularized set of issues, witnesses, evidence, litigants, and jury members.[299] To the extent that an appellate court announces per se rules of evidentiary exclusion, the trial judge loses the authority

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296. *See supra* note 287.

297. *See, e.g.*, Zani v. State, 758 S.W.2d 233, 240 & n. 5 (Tex. Crim. App. 1988) (discussing per se rule of excluding hypnotically refreshed testimony for failure to meet criteria set out in *Frye* and noting jurisdictions that follow blanket policy of exclusion). *But see* 3 D. LOUISELL & C. MUELLER, *supra* note 29, § 382, at 644 (evidence may be helpful although scientific community has not accepted it; rules do not support continual refusal to accept qualified expert testimony based on this reason alone).

298. *See* FED. R. EVID. 403. Under rule 403, a trial judge is required to make a very particular ruling, applicable only to the specific factual scenario presently before him. *Id.* Furthermore, legal precedents are of so little value in determining the proper balance in a specific case that the American Law Institute explicitly forbade the use of 403 rulings as legal precedent when it drafted the Model Code of Evidence. A.L.I. MODEL CODE OF EVIDENCE RULE 303 (discretion of Judge to Exclude Admissible Evidence), Comment (1942):

> The application of this rule should depend so completely upon the circumstances of the particular case and be so entirely in the discretion of the trial judge that a decision in one case should not be used in another.

Id.; *see also* 22 C. WRIGHT & K. GRAHAM, *supra* note 247 § 5214 (past decisions useless in weighing process under Rule 403).

299. *See* Rosenberg, *Judicial Discretion Viewed From Above*, 22 SYRACUSE L. REV. 635, 663 (1971). Professor Rosenberg notes:

> The final reason—and probably the most pointed and helpful one—for bestowing discretion on the trial judge as to many matters is, paradoxically, the superiority of his nether position. It is not that he knows more than his loftier brothers; rather he sees more and senses more. In the dialogue between the appellate judges and the trial judge, the former often seems to be saying: "You were there. We do not think we would have done what you did, but we were not present and we may be unaware of significant matters, for the record does not adequately convey to us all that went on at the trial."

Id.; *see also* 3 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 702[02] (judge has broad discre-

to exercise discretion in the search for a fairly rendered, reliable verdict in a specific case.[300] Evidence that might be too experimental, too esoteric and too unreliable when presented by a poorly qualified or inarticulate expert witness in a small town county court might, six months later, be widely accepted and regarded as reliable in a major metropolitan court when presented by a highly qualified expert witness. Third, such per se rules of exclusion run a very real risk of being declared unconstitutional by the Supreme Court.[301] Thus, expertise should only be excluded when a particular expert witness, in a specific case, poses a serious danger of misleading the jury or confusing the issues and this danger substantially outweighs any possible probative value of his testimony.[302]

For example, in *United States v. Torniero*,[303] the Second Circuit Court of Appeals held that the trial judge properly excluded the defendant's proffered expert testimony on "compulsive gambling disorder" because it was irrelevant. There was no evidentiary connection made "between the compulsion to gamble and the inability to conform with the law or to restrain oneself from breaking the law."[304] The court specifically noted, however, that the trial judge should not have reached this decision for the sole reason that the potential for confusion existed.[305] There is no "complexity exception" to the ad-

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tion under rule 403 to admit or exclude expert evidence unless "manifestly erroneous") (quoting Salem v. United States Lines Co., 370 U.S. 31, 35 (1962)).

300. *See* 3 J. WEINSTEIN & M. BERGER, *supra* note 29 ¶ 702[02] (discussing need for "case-by-case" balance under rule 403).

301. *See supra* notes 84-95, discussing *Rock v. Arkansas*.

302. For an opposing view that suggests trial court judges should not be making such particularized "probative value/prejudicial effect" decisions, see Tanford, *A Political Choice Approach to Limiting Prejudicial Evidence*, 64 IND. L.J. 831 (1989). Professor Tanford posits a "political choice model" which "conceives of the admissibility decision as a political choice between conflicting values." *Id.* at 834. He begins with the premise that "[t]he more fundamental characteristic of our trial system is in fact its adversarial structure, not its commitment to accurate results." *Id.* at 850. Tanford concludes that when evidence has both relevancy and prejudicial effect, its admissibility is determined by a political decision as to which societal values should be favored and fostered. *Id.* at 865. Thus, the trial judge's broad discretionary power under rule 403 is in conflict with the usual justice system hierarchy. *Id.* at 836.

303. 735 F.2d 725 (2d Cir. 1984), *cert. denied*, 469 U.S. 1110 (1985).

304. *Id.* at 733.

305. *Id.* One reason District Judge Cabranes ruled that the defendant could not offer expert evidence on pathological gambling disorder was that:

> Were the defendant's request granted, the jury might find itself faced with a parade of psychiatrists, psychologists, social workers, and others, some testifying for the defendant, some for the Government. The jury would find itself working its way through volumi-

missibility of evidence or the right to a jury trial.[306] Thus, jurors should not be shielded from differences of opinion expressed by experts in a profession that can "never be entirely devoid of subjective disagreement," on the unfounded supposition that jurors cannot "separate the wheat from the chaff."[307] In *Torniero*, the expert testimony was properly excluded because it interfered with legally accurate decision making.[308] Jurors should not be confused by the interjection of irrelevant facts or extraneous legal issues. However, the mere fact that relevant expert evidence may be complex and perhaps even confusing is not an acceptable basis for exclusion.[309] Jurors are more competent at making common sense decisions regarding complex issues than many people give them credit for.[310]

A third countervailing consideration under rule 403 is undue delay or waste of time.[311] Expert testimony which would assist the jury to better understand a particular area of knowledge in some instances may not necessarily help them in the particular case at hand. If the expert will not give greater insight into an area which concerns a *disputed* issue, his testimony, no matter how educational or interesting, would not be helpful in *this* case.

For example, in a prosecution for sexual assault of a child, the child may have delayed reporting the abuse[312] or may have recanted the initial outcry.[313] Here, a psychologist's testimony regarding the characteristics of a "child sexual abuse syndrome" might rebut a defendant's claim that the child's subsequent behavior was inconsistent with

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nous, probably contradictory, testimony couched in technical jargons of the various mental health professions.

Id.; *see also* United States v. Torniero, 570 F. Supp. 721, 723 (D.C. Conn. 1983), *aff'd*, 735 F.2d 725 (2d Cir. 1984), *cert. denied*, 469 U.S. 1110 (1985).

306. *Torniero*, 735 F.2d at 734.

307. *Id.* at 734 (quoting Barefoot v. Estelle, 463 U.S. 880, 901 n.7 (1983)).

308. *Id.* at 730.

309. United States v. Ridling, 350 F. Supp. 90, 98 (E.D. Mich. 1972).

310. *See id.* The court stated that jurors "are really very good at sorting out good evidence from bad, of separating the credible witness from the incredible, and of disregarding experts who attempt to inject their opinions into areas of which they have little knowledge." *Id. But see* Imwinkelried, *Judge Versus Jury*, *supra* note 29, at 580 (noting one of *Frye* rule's foremost rationales is jurors are incompetent to assess scientific proof critically and accurately).

311. FED. R. EVID. 403; *see also supra* note 284.

312. *See* People v. Dunnahoo, 152 Cal. App. 3d 561, 577, 199 Cal. Rptr. 796, 804 (1984).

313. *See* People v. Reid, 475 N.Y.S.2d 741, 741 (N.Y. 1984).

having been sexually assaulted.[314] A psychologist's testimony might also be admissible to rehabilitate a child victim's credibility after cross-examination.[315] If, however, the disputed issues center not upon the question of whether the abuse occurred but upon the identity of the acknowledged abuser, that testimony might not assist the trier of fact in this particular case.[316]

Similarly, in a rape prosecution, a material element is the alleged victim's lack of consent.[317] If consent becomes a disputed issue at trial, because the defendant claims that intercourse was consensual, expert testimony regarding the existence and characteristics of "rape trauma syndrome" may be relevant to rebut this claim.[318] Conversely, if the only contested issue is the identification of the attacker, an expert on rape trauma syndrome will probably not assist the jury

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314. *See, e.g.*, State v. Lindsey, 720 P.2d 73, 74-75 (Ariz. 1986). The court held expert testimony admissible in a sexual exploitation of a minor prosecution since:

> We cannot assume that the average juror is familiar with the behavioral characteristics of victims of child molesting. Knowledge of such characteristics may well aid the jury in weighing the testimony of the alleged child victim. Children who have been the victim of sexual abuse or molestation may exhibit behavioral patterns (e.g. recantation, conflicting versions of events, confusion or inarticulate descriptions) which jurors might attribute to inaccuracy or prevarication, but which may be merely the result of immaturity, psychological stress, societal pressures or similar factors as well as of their interaction. Jurors, most of whom are unfamiliar with the behavioral sciences, may well benefit from expert testimony of the general type offered in the present case . . . .

Id. at 74-75. The Arizona Supreme Court stressed that the purpose of admitting such generalized testimony is to give the jury information that it may accept or reject when making its own determination of the accuracy or credibility of the witness. Its purpose is not, however to "tell the jury" who is correct or incorrect, who is lying and who is truthful. *Id.*

315. *See* People v. Sanchez, 208 Cal. App. 721, 734-35, 256 Cal. Rptr. 446, 453-54 (Cal. App. 1989) (defendant's cross-examination attacking child victim's credibility permitted rehabilitating testimony of child psychologist on symptoms and characteristics of child sexual abuse accommodation syndrome), *cert. denied*, __U.S. __, 110 S.Ct. 286, 107 L. Ed. 2d. 226 (1989). *But see* Commonwealth v. Zamarripa, 549 A.2d 980, 981 (Pa. Super. Ct. 1988) (relying on California cases to reach opposite conclusion).

316. Bussey v. Commonwealth, 697 S.W.2d 139, 141 (Ky. 1985) (fact that sexual abuse could have been committed by victim's uncle made expert's testimony on child sexual abuse accommodation syndrome irrelevant to defendant's guilt).

317. *See* R. PERKINS & R. BOYCE, CRIMINAL LAW 209 (1982) ("the ancient definition of rape" was carnal knowledge of a woman "against her will" which later evolved into modern statutory and decisional phrase "without her consent").

318. *See* State v. Marks, 647 P.2d 1292, 1299 (Kan. 1982) (if presence of rape trauma syndrome detectable and reliable as evidence that forced assault took place, then relevant when defendant claims consent). *See generally* Note, *"Rape Trauma Syndrome" and Inconsistent Rulings on Its Admissibility Around the Nation: Should the Washington Supreme Court Reconsider Its Position in State v. Black*, 24 WILLAMETTE L. REV. 1011, 1028-29 (1988) (discussing development of rape trauma syndrome, its use, criticisms and impact).

since the occurrence of a rape is not in issue.[319]

Thus, the proffered expert testimony must give the jurors greater insight into a material and disputed fact of consequence.[320] The expert's testimony must "fit" the disputed issues.[321] For example, in *United States v. Downing*,[322] the Third Circuit noted that one aspect of the relevancy of the expert's testimony is whether that testimony "is sufficiently tied to the facts of the case that it will aid the jury in

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319. *See* State v. McGee, 324 N.W.2d 232, 234 (Minn. 1982) (Wahl, J., dissenting) (rape trauma syndrome not material to character of defendant).

320. For example, in *United States v. Dowling*, the Third Circuit determined that the district court properly excluded the expert's testimony regarding eyewitness reliability because his proffered testimony did not relate to or "fit" any of the disputed issues at trial. 855 F.2d 114, 119 (3d Cir. 1988), *cert. granted*, 489 U.S. 1051 (1989). The expert would have testified to four issues. The expert would have stated that although a high level of stress at the time of observation frequently reduces recall ability, the witnesses at trial were not in such a situation. *Id.* Second, the expert would have testified to "weapon focus phenomena" in which a person tends to focus more on the weapon displayed than on the person who displays it, however, there was no evidence in the record that any of the eyewitnesses were faced with a weapon when they made their observations. *Id.* Third, the expert would have testified that generally a person must observe for at least fifteen seconds in order to give a fairly accurate account and that the evidence in the trial supported an inference that the eyewitnesses had thirty seconds of observation. Fourth, the expert would have testified that reliability of identification is impaired when the age of the eyewitness is older than 65 or younger than 13 or 14, but that none of the eyewitnesses were in those age groups. *Id.* Thus, since almost all of the factors which the expert was prepared to testify to regarding the unreliability of eyewitness identification were *not* present in the particular case on trial, the district court did not abuse its discretion by not admitting the evidence. The court concluded that the expert's testimony would not assist the jury's accurate resolution of any consequential fact. *Id.* at 118; *see also* United States v. Sebetich, 776 F.2d 412, 419 (3d Cir. 1985) (admissibility of testimony on reliability of eyewitness identification affected by whether proffered testimony "fits" specific eyewitness identification characteristics at issue), *cert. denied*, 484 U.S. 1017 (1988).

321. *See* United States v. Dowling, 855 F.2d 114, 118 (3d Cir. 1988), *cert. granted*, 489 U.S. 1051 (1989); United States v. Smith, 736 F.2d 1103, 1106 (6th Cir.) (testimony on unreliability of eyewitness identification "relevant to the exact *facts* before the court") (emphasis in original), *cert. denied*, 469 U.S. 868 (1984).

322. 753 F.2d 1224 (3d Cir.), *aff'd without op.*, 780 F.2d 1017 (3d Cir. 1985). Judge Becker's "groundbreaking" decision addressed the recurrent issue of the admissibility of expert testimony on the reliability of eyewitness identification. D. LOUISELL & C. MUELLER, *supra* note 29, at 401 (Supp. 1989). In rejecting the *Frye* standard which frequently led to per se rejection of novel scientific expertise in criminal trials and favoring a "reliability" standard under rule 702, Judge Becker stated:

> In our view, Rule 702 requires that a district court ruling upon the admission of (novel) scientific evidence, i.e., evidence whose scientific fundamentals are not suitable candidates for judicial notice, conduct a preliminary inquiry focusing on (1) the soundness and reliability of the process or technique used in generating the evidence, (2) the possibility that admitting the evidence would overwhelm, confuse, or mislead the jury, and (3) *the proffered connection between the scientific research or test result to be presented, and particular disputed factual issues in the case.*

resolving a factual dispute."[323] Thus, the court recommended that the proponent of the evidence should make an "on-the-record" detailed proffer to the trial judge and explain precisely how the expert's testimony "fits" or is relevant to the contested issues in the particular case.[324] Failure to make such a proffer is, in itself, sufficient reason to exclude the expert's testimony.[325]

The trial judge has great discretion in balancing the probative value of the expert's testimony to determine if it is substantially outweighed by some countervailing factor, though that balance generally favors admissibility in doubtful cases.[326] One factor that may not be taken into account when balancing the probative and prejudicial aspects of

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Id. at 1237 (emphasis added). Thus, the closer the "fit" between the expertise of the witness and the disputed issues in the case, the more likely that testimony will aid the factfinder.

On remand, the district court in *Downing* found: 1) the methodology and studies used in this case were not explained fully enough to support a finding of scientific reliability. Here the proffer of evidence was insufficient; 2) that the expert testimony offered in this case could "mislead" the jury because the psychologists did not present any data on which they had relied, but merely offered their conclusions. The district court found that "[a]bsent such information, a jury has little basis for evaluating the testimony they hear," and 3) that this particular expert's proffered testimony did not "fit" the disputed issues. *Id.* at 790-91. Here, all twelve witnesses who identified the defendant had observed him for periods ranging from five to forty-five minutes, while the scientific studies on eyewitness identification concerned exposure rates of under one minute. *Id.* at 792. Further, the scientific studies had not tested the accuracy of a person's memory for periods of up to three years which was the relevant time frame between the witnesses' transactions with the defendant and the time of trial. *Id.* at 786, 792. Lastly, the expertise did not fit the identification issues because the eyewitnesses were not presented with a stressful, fear-inducing situation like the simulated robbery, rape, and burglary scenarios of the study. *Id.* at 792.

323. *Downing*, 753 F.2d at 1242.

324. *Id.*

325. *Id.*

326. Judge Weinstein recommends:

> If there is doubt about existence of unfair prejudice, confusion of the issues, misleading, undue delay, or waste of time, it is generally better practice to admit the evidence taking necessary precautions by way of contemporaneous instructions to the jury followed by additional admonition in the charge.

1 J. WEINSTEIN & M. BERGER, *supra* note 29, ¶ 403[01]; *see also* United States v. Roark, 753 F.2d 991, 994 (11th Cir. 1985) (error to exclude expert psychiatrist's testimony; major function of rule 403 limited to excluding prejudicial evidence with limited probative force) (quoting United States v. McRae, 593 F.2d 700, 707 (5th Cir.), *cert. denied*, 444 U.S. 862 (1979)); United States v. Betancourt, 734 F.2d 750, 757 (11th Cir.) (rule 403 allows exclusion of probative evidence and should be sparingly used because an extraordinary remedy), *cert. denied*, 469 U.S. 1021 (1984); United States v. Hensel, 699 F.2d 18, 38 (1st Cir. 1983) (drug agent's testimony concerning general drug smuggling technique admissible under rule 403 despite risk of prejudice); United States v. Thevis, 665 F.2d 616, 633-34 (5th Cir. 1982) (rule 403 extraordinary remedy). *See generally* Dolan, *Rule 403: The Prejudice Rule in Evidence*, 49 S. CAL. L. REV. 220, 231-32 (1976).

an expert's testimony is the credibility of the witness since credibility is always a matter for the jury to decide.[327] On the other hand, the trial judge should give careful consideration, on the record, to all reasons for admitting or excluding the expert evidence if he expects an appellate court to pay deference to his ruling.[328] If the trial judge determines that there are countervailing considerations under rule 403 which might justify exclusion of the expertise in the particular case, he should first determine whether there are any alternate means to alleviate the perceived dangers before ruling the expert testimony inadmissible.

VII. ALTERNATIVES TO SHUTTING THE TRIAL COURT DOOR ON NOVEL TESTIMONY

There is always some potential for expert evidence to unfairly prejudice or mislead the jury, just as there is some potential for any other type of evidence to unfairly prejudice or mislead the jury. That possibility ought not be determinative of admissibility; only when there is a high probability of expert testimony misleading the jury should exclusion be considered as the appropriate remedy. Unfortunately, many courts have simply ruled that evidence is inadmissible after determining that lay jurors *might* be misled by "the false aura of infallibility" of scientific expertise.[329] There are other alternatives, however, which should be considered before making such a ruling.

The legitimate concern is that jurors may overvalue expert evidence which either purports to be or is mistakenly assumed to be both objective and conclusive. Thus, before automatically excluding problem-

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327. 22 C. WRIGHT & K. GRAHAM, *supra* note 247, § 5214, at 265-66.

328. *See* United States v. Moore, 786 F.2d 1308, 1312 (5th Cir. 1986) (testimony on reliability of eyewitness identification may be admissible; reviewing courts more willing to uphold trial judge's decision after evaluating reasons), *reh'g denied*, 791 F.2d 928 (5th Cir. 1986); United States v. Blade, 811 F.2d 461, 464-65 (8th Cir. 1987) (judge did not abuse discretion in excluding expert testimony on eyewitness identification since decision carefully weighed nature and purpose of testimony against prejudicial effect), *cert. denied*, 484 U.S. 839 (1987).

329. *See* United States v. Alexander, 526 F.2d 161, 168 (8th Cir. 1975) (polygraph evidence likely shrouded with aura of infallibility depriving defendent of peer's common sense judgment); United States v. Addison, 498 F.2d 741, 744 (D.C. Cir. 1974) (abuse of discretion for judge to admit evidence of voiceprint identification because jury may assume mystic infallibility); United States v. Amaral, 488 F.2d 1148, 1152 (9th Cir. 1973) (scientific or expert testimony potentially dangerous because of aura of special reliability thus expert testimony on unreliability of eyewitness identification properly excluded); United States v. Wilson, 361 F. Supp. 510, 513 (D. Md. 1973) (defendant's expert testimony on polygraph test properly excluded because "trial by polygraph" undesireable).

atic expert testimony, the trial judge should first determine whether a jury can be made aware that a particular expert's opinion may be only tentative, not conclusive, in this specific scientific area. A technique which is inherently uncertain or which results in a relatively high error rate might be reliable enough for admission if the factfinder understands and takes into account its weaknesses. A similar concern is: Can the jury be made aware that this particular expert's testimony may be a subjective evaluation of particular facts, and that other experts, as well as the jurors themselves, might reasonably disagree with his evaluation?

Thus, a trial court should consider what possible steps can be taken to ensure that proffered expertise does not mislead the jury. Some of these steps might include: (1) a pretrial hearing in which the experts testify to the novel area of scientific or behavioral expertise, thus giving all parties and the judge an opportunity to delve into the reliability of the theory and methodology of the field;[330] (2) greater pretrial discovery of scientific reports which fully document the tests performed, the objective findings of the tests, the conclusions reached based upon the findings, the identity of the expert who performed the tests, and his credentials in the field;[331] (3) an assessment of the degree to which the opponent of the expertise is prepared to cross-examine based upon

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330. *See* United States v. Downing, 753 F.2d 1224, 1241 (3d Cir. 1985) (recommending "in limine" hearing in which trial court could consider "offers of proof, affidavits, stipulations, or learned treatises . . . in addition to testimonial or other documentary evidence (and of course, legal arguments)").

331. *See* Moenssens, *Admissibility of Scientific Evidence, supra* note 8, at 568-70; ABA PROJECT ON STANDARDS FOR CRIMINAL JUSTICE, STANDARDS RELATING TO DISCOVERY AND PROCEDURE BEFORE TRIAL 66 (Approved Draft 1970). The "need for full and fair disclosure is especially important with respect to scientific proof and the testimony of experts. This sort of evidence is practically impossible for the adversary to test or rebut at trial without an advance opportunity to examine it closely." *Id.* It was noted at the Symposium on Science and the Rules of Evidence in 1983 that part of the reason for the extensive use of the *Frye* test in criminal cases, but not civil trials, is that in the latter type of litigation there is considerably more time and effort devoted to pretrial discovery. *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 219 (1983) (remarks of Perry Fuller). Here both sides of the lawsuit are well prepared to address the scientific evidence and its reliability. *Id.* In fact, Professor Giannelli considers this criterion so important that he advocates amending rule 702 to include this second sentence:

> Expert testimony is not admissible unless the proponent gives the adverse party sufficient advance written notice of intent to use such evidence, including the nature of the expected testimony, the tests used, and the qualifications of the person who will testify.

Rules for Admissibility of Scientific Evidence, 115 F.R.D. 79, 102 (1987) (Giannelli's proposal); *see also* People v. Castro, 545 N.Y.S.2d 985, 998-99 (N.Y. Sup. Ct. 1989) (extensive listing of possible pretrial discovery mechanisms in DNA testing).

the existence of specialized literature in the field;[332] (4) the existence and availability of other objective experts in the field;[333] (5) the adequacy of instructions to the jury explaining the limitations of scientific expertise in general, the limitations of expertise in this particular field, the limitations of this expert's data, findings, and conclusions, and an admonition that the jurors' use the same common sense in evaluating expert testimony that they do in examining any other evidence.[334]

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332. *See* United States v. Baller, 519 F.2d 463, 466 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975) (noting ability to dispute expertise). The Fourth Circuit held that it was not error to admit novel scientific evidence of voice spectrographic analysis since:

> Competent witnesses were available to expose its limitations, and the defense was furnished with the names of other experts who could conduct their own analyses of the tapes. Although the defense did not call any expert witnesses, Baller's attorney demonstrated thorough knowledge of the subject in a detailed cross-examination that developed the possibility of error in both the general technique and the specific identification of the defendant.

Id. at 466. Indeed, as the Supreme Court noted in both *Barefoot*, and *Fensterer*, adequate and well-prepared cross-examination of expert witnesses is crucial to ensure that jurors do not attribute "mystic infallibility" to experts. *See supra* note notes 63, 65 and accompanying text. Indeed, as the Supreme Court noted in both *Barefoot* and *Fensterer* "only when the opponent of scientific evidence abdicates his responsibility to challenge the expert, might a jury attribute mystic infallibility to scientific testimony. But that is a failure of the attorney not the rules of evidence." *Rules for Admissibility of Scientific Evidence*, 115 F.R.D. 79, 132 (1987) (Melson's proposal).

Under the Federal Rules of Evidence, the opposing attorney need not bring his own expert to court to refute the expertise of the sponsoring party. Through the use of a hearsay exception, rule 803(18), the adversary may cross-examine the expert with a learned treatise:

> 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 reliable authority by the testimony or admission of the witness or by other expert testimony or by judicial notice.

FED. R. EVID. 803(18). Only if the expert witness denies the authority of the countering literature, need the opponent bring in a witness to attest to its authority before reading statements from it into evidence.

333. *See Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 232 (1983) (Berger's remarks). Margaret Berger reported that her working group of participants advocated greater use of court appointed experts, expert panels designated by professional associations, and "protocols" for expert witnesses "under which they would be required to state their qualifications, the strengths and weaknesses of the evidence they plan to present, the names of persons who might provide competent opposing arguments, and other information of a similar nature." *Id.*

334. *See, e.g.*, 2 E. DEVITT & C. BLACKMAR, FEDERAL PRACTICE AND INSTRUCTIONS § 72.07 (3d ed. 1977) (sample pattern jury instruction for expert witnesses); 3 J. WEINSTEIN & M. BERGER, *supra* note 29 ¶ 702[02] (sample jury instructions); *see also* United States v. Williams, 583 F.2d 1194, 1200-01 n.13 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979). In *Williams*, the Second Circuit praised the following "excellent instruction" given by the trial judge:

If the criminal justice community is concerned that jurors are not enlightened enough about scientific principles and testing procedures to exercise intelligent decisionmaking in weighing that evidence, the preferable remedy is to inform their discretion rather than prohibiting them from considering the evidence. Thus, total exclusion of novel expertise is a Draconian device which should be avoided whenever possible.

VIII. CONCLUSION

It is time for both trial and appellate judges to take a more sensitive approach to the admissibility of novel expert evidence. Since, historically, neither judges nor lawyers have had significant training or interest in emerging scientific fields,[335] it is not surprising that they view this type of evidence with some skepticism. But as new scientific techniques are born and old ones develop new uses, criminal trial courts will continue to be barraged by physical, behavioral, and social scientists. The present, ad hoc application of the *Frye* or McCormick standards of admissibility do not adequately serve the interests of either the legal or scientific communities. The *Frye* test, with its per se exclusion of a particular category of expertise, has led to inconsistent results between jurisdictions and related areas of expertise. It has prevented juries from using evidence which is relevant and reliable. It is a test which does not adequately serve the truthseeking mission of a

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> The government has offered the testimony of Frederick Lundgren as an expert in voice identification, through the technique of spectrographic analysis. You will recall that he testified with respect to a comparison which he made between the voice on an exemplar made by Mr. Williams and a voice that appeared on the tape recording of a telephone conversation which Mr. Lopez testified he recorded. You may consider Mr. Lundgren's opinion on this matter. You may give that opinion whatever weight you feel it deserves, taking into account Mr. Lundgren's qualifications, his methods, and the reasons he gave for his opinion. But I want to stress again that you are the finders of fact in this case. It is you who must determine whether the known voice and the questioned voice are the same or different. You may listen to the tapes yourselves and reach a different conclusion than did Mr. Lundgren. You may conclude that his opinion is not based on adequate education, training, or experience. You may decide that the technique of spectrographic analysis is not reliable. You may conclude that however reliable the technique, Mr. Lundgren has not had sufficient education, training, or experience to be relied upon as a practitioner of that technique, Or you may decide that the technique is reliable and that Mr. Lundgren is a reliable practitioner of the technique, but that you disagree with his conclusion. You may also decide that you agree with his conclusion.

Id. at 1200-01.

335. *See supra* note 8.

criminal trial." As Justice Stewart wrote, "any rule that impedes the discovery of truth in a court of law impedes as well the doing of justice."[336] The McCormick general relevancy test, on the other hand, has sometimes led to the wholesale introduction of subjective expert testimony of questionable reliability without sufficient focus upon its tendency to appear more probative, objective, and conclusive than it really is. A middle approach, which uses a single continuum of reliability and focuses upon the specific use of the expertise in the particular case will require more time, effort, and thoughtfulness on the part of both litigants and judges. It will, however, result in the admission of more reliable expert evidence, tailored both to the disputed factual issues of the trial and the present level of scientific certainty.

In experimental fields or those in which results are highly subjective, the trial judge acts well within his discretion when he limits the expert to a generalized "educator" role, giving the jury background information which will assist them in evaluating the historical facts. As the professional field gains in proven accuracy, reliability, and replicability of result, so does the likelihood that the expert's professional opinion and specific data relevant to the disputed issues in this case will assist the jury. This "single continuum" methodology of assessing the reliability of expert evidence ensures that the greatest judicial scrutiny is given to that expertise: 1) which is most foreign to jurors' common sense ability to resolve the issue themselves; 2) which purports to be highly objective and accurate; and 3) which points most conclusively at the criminal defendant. This mode of analysis permits an expanding role for experts in the courtroom while ensuring that their expertise enhances but does not supplant the jury's role.

336. Hawkins v. United States, 358 U.S. 74, 81 (1958) (Stewart, J., concurring).