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The Admissibility of Scientific Evidence in Illinois

I. INTRODUCTION

Although many trial judges are averse to a general discussion of the subject,¹ there is an unmistakable trend in the increased use of scientific evidence at trial.² This trend has generated a critical evaluation of the standards used in determining the admissibility of such evidence. Many courts follow the rule of admissibility set forth in *Frye v. United States*,³ while some do not follow it at all.⁴ Most courts, however, apply their own particularized version of the *Frye* standard.⁵ Although Illinois has adopted the *Frye* test, it has failed to apply it regularly.⁶ Moreover, Illinois courts do not always use the same interpretation of the test even when they do choose to apply it.⁷ This lack of uniformity has created conflicting legal standards and has caused confusion among the courts.

First, this Comment will provide an historical review of the *Frye* standard, including its application in jurisdictions other than Illinois. Next, this Comment will discuss the Illinois approach to scientific evidence, noting that it has left both judges and attorneys in a quandary over when novel scientific evidence should be admitted. Finally, this Comment will critique the *Frye* standard as it has been

1. Moenssens, *Admissibility of Scientific Evidence: An Alternative To The Frye Rule*, 25 WM. & MARY L. REV. 545 n.2 (1984) (citing *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 220-21 (1983)). A six-year veteran of judicial conferences reported that, of all the topics discussed, "none was as unpopular with the judges as scientific evidence No matter how hard we tried, we could not elicit any excitement about the *Frye* test. They acted as if the issue just did not come up in their courtrooms." *Id.* See *infra* note 3 (*Frye* standard set forth).

2. The National Center for State Courts has conducted a nation-wide survey in which almost half of the participating judges and attorneys stated that they encounter scientific evidence in approximately one-third of their trials. Imwinkelried, *The Standard For Admitting Scientific Evidence: A Critique From the Perspective of Juror Psychology*, 28 VILL. L. REV. 554 (1982-83) (citing *Study to Investigate Use of Scientific Evidence*, 7 NAT'L L. CENTER FOR S. CTS. REP. 1 (Aug. 1980)).

3. The *Frye* standard imposes on proponents of novel scientific evidence the burden of establishing that the scientific technique or principle in question has "gained general acceptance in the particular field in which it belongs." *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923). See *infra* notes 15-27 and accompanying text.

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

5. See *infra* notes 47-63 and accompanying text.

6. See *infra* notes 154-84 and accompanying text.

7. See *infra* notes 185-204 and accompanying text.

employed in Illinois and will suggest an alternative approach based on the Federal Rules of Evidence.

II. BACKGROUND: *FRYE V. UNITED STATES* AND THE "GENERAL ACCEPTANCE STANDARD"

In assessing the admissibility of evidence in the federal court system, the court's threshold determination must be whether the evidence is relevant.⁸ Relevant evidence is that "having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would have been without the evidence."⁹ Courts must exclude relevant evidence, however, if its probative value is substantially outweighed by the danger of unfair prejudice, confusion, or misleading the jury.¹⁰

Although most evidence need fulfill only this relevancy requirement, courts historically have required that novel scientific evidence¹¹ satisfy an additional criterion.¹² This additional requirement is premised upon the belief that factfinders are likely to perceive scientific evidence as infallible¹³ and thus place inordinate credence in its results.¹⁴ The first court to recognize the need

8. C. McCORMICK, *McCORMICK ON EVIDENCE* §§ 184-85, at 540-48 (3d ed. 1984).

9. *FED. R. EVID.* 401.

10. *FED. R. EVID.* 403.

11. A precise definition of what constitutes "scientific evidence" is curiously absent from court opinions and commentaries. One commentator has defined novel scientific evidence as that produced from "newly ascertained or applied scientific principles." Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, A Half-Century Later*, 80 *COLUM. L. REV.* 1197, 1198 (1980). This definition is somewhat circular, however, because it is unclear what constitutes a scientific principle. *See also infra* notes 164-68 and accompanying text (brief discussion of what constitutes scientific evidence in Illinois).

12. C. McCORMICK, *supra* note 8, § 203, at 605 ("[t]he most common special rule is that . . . the proponent must show general acceptance of the principle or technique in the scientific community.")

13. *Barefoot v. Estelle*, 463 U.S. 880 (1983) (Blackmun, J., dissenting). Writing for a three member dissent, Justice Blackmun stated, "[i]ndeed, unreliable scientific evidence is widely acknowledged to be prejudicial. The reasons for this are manifest. 'The major danger 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.* at 926 (citing Giannelli, *supra* note 11, at 1197). *See United States v. Addison*, 498 F.2d 741, 744 (D.C. Cir. 1974) (jurors tend to attribute a "mystic infallibility" to scientific testimony); *Reed v. State*, 283 Md. 374, 385, 391 A.2d 364, 370 (1978) (noting the "apparent objectivity" that sophisticated mechanical devices sometimes generate); *People v. Kelly*, 17 Cal. 3d 24, 31, 130 Cal. Rptr. 144, 149, 549 P.2d 1240, 1245 (1976) (jurors often overestimate the certainty of scientific evidence). *See Imwinkelried, supra* note 2, at 554 (further discussion of the impact of scientific evidence upon jurors).

14. According to a survey of jury attitudes, about one-fourth of jurists presented with scientific evidence believed that, had such evidence been absent, their verdict would have

for special rules to govern scientific evidence was *Frye v. United States*.¹⁵ The appellant in *Frye*, a convicted murderer, sought to introduce evidence that he had passed a systolic blood pressure deception test, a forerunner of the modern polygraph lie detector.¹⁶ The *Frye* court refused to admit the evidence, stating that in order for novel scientific evidence to be admissible, its technique and underlying principle must be generally accepted in the relevant scientific community:¹⁷

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 of discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs."¹⁸

The *Frye* court failed to cite precedent or identify a particular rationale for its decision,¹⁹ yet most courts have adopted the "general acceptance" requirement without question.²⁰ The *Frye* stan-

been not guilty instead of guilty. Pearson, Ryan, Houlden & Mihajlovic, *The Uses and Effects of Forensic Science in the Adjudication of Felony Cases*, 32 J. FORENSIC SCI. 1730, 1748 (1987).

15. 293 F. 1013 (D.C. Cir. 1923).

16. *Id.* See *infra* note 22 (description of the polygraph test). Years after the defendant in *Frye* was convicted, another person confessed to the murder. Wicker, *The Polygraphic Truth Test and the Law of Evidence*, 22 TENN. L. REV. 711, 715 (1953) (citing 14TH ANN. REP. OF THE N.Y. JUD. COUNCIL 265 (1948)).

17. *Frye*, 293 F. at 1014.

18. *Id.*

19. Note, *Different Standards and Conflicting Results: A Re-Evaluation of the Frye Test For Admitting Novel Scientific Evidence in Light of Decisions Involving Spectrographic Evidence Introduction*, 5 REV. LITIGATION 327, 329 (1986) (citing 22 C. WRIGHT & K. GRAHAM, FEDERAL PRACTICE AND PROCEDURE § 5168, at 87 (1978)). See also Lacey, *Scientific Evidence*, 24 JURIMETRICS J. 254, 257 (1984).

20. Many cases cite *Frye* without comment or analysis. See *United States v. Zieger*, 350 F. Supp. 685, 687 n.6 (D.D.C.), *rev'd*, 475 F.2d 1280 (D.C. Cir. 1972) (noting the lack of a *Frye* standard discussion in federal decisions); *People v. Wochnick*, 98 Cal. App. 2d 124, 127-28, 219 P.2d 70, 72-73 (1950), *cert. denied*, 342 U.S. 888 (1951) (lie detector test held inadmissible); *Henderson v. State*, 94 Okla. Crim. 45, 52-55, 230 P.2d 495, 502-05, *cert. denied*, 342 U.S. 898 (1951) (same); *State v. Bohner*, 210 Wis. 651, 657-59, 246 N.W. 314, 317 (1933) (same). See also *Rivers v. Black*, 259 Ala. 528, 531, 68 So. 2d 2, 4-5 (1953) ("drunkometer" test subject to *Frye*-type analysis); *Kaminski v. State*, 63 So. 2d 339, 340-41 (Fla. 1952) (lie detector test held inadmissible); *Boeche v. State*, 151 Neb. 368, 377, 37 N.W.2d 593, 597 (1949) (same). Furthermore, once the standard was adopted by a particular jurisdiction, the standard was, for the most part, applied selectively. See *Reed v. State*, 283 Md. 374, 451-52, 391 A.2d 364, 403 (1978) ("[t]he standard used by courts generally for the admission of evidence in such matters as fingerprints, ballistics, intoxication tests, and X-rays is substantially different from that enunciated in *Frye*"); *Giannelli, supra* note 11, at 1219-21 ("[T]he selective application of the general

dard is now generally referred to as the traditional standard of admissibility for novel scientific evidence²¹ and has been used to determine the admissibility of evidence derived from polygraph lie detector tests,²² voiceprints,²³ residue tests,²⁴ bite mark compari-

acceptance standard is one of its most notable features"). In the cases involving polygraph tests, however, courts have been consistent in their application of the *Frye* standard. McCormick, *Scientific Evidence: Defining a New Approach to Admissibility*, 67 IOWA L. REV. 879, 884 (1982).

21. Giannelli, *Background Paper Prepared For the National Conference of Lawyers and Scientists*, 99 F.R.D. 189, 198 (1983); see *Reed*, 283 Md. at 382, 391 A.2d at 368 ("This criterion of general acceptance in the scientific community has come to be the standard in almost all of the courts in the country . . ."); cf. Rossi, *Modern Evidence and the Expert Witness*, 12 LITIGATION 18, 20 (1985) ("Within the last decade, courts in more than 15 jurisdictions have rejected *Frye*."

22. The polygraph monitors several autonomic physiological functions (such as pulse rate, blood pressure, respiration, and perspiration) of the subject as he responds to questioning. The subject is judged to be lying when the autonomic disturbance exceeds a certain point. See J. REID & F. INBAU, TRUTH AND DECEPTION: THE POLYGRAPH ("LIE DETECTION") TECHNIQUE (2d ed. 1977) (for further explanation of the test). See also MATTE, THE ART AND SCIENCE OF THE POLYGRAPH TECHNIQUE (1980). See generally C. MCCORMICK, *supra* note 8, § 206, at 626-27.

Many early post-*Frye* courts treated *Frye* as if it established that polygraph results were inadmissible regardless of any improvements in the technology. See *People v. Davis*, 343 Mich. 348, 371, 72 N.W.2d 269, 282 (1955) (noting that the polygraph had not quite reached the dignity of positive evidence); *People v. Leone*, 25 N.Y.2d 511, 517, 307 N.Y.S.2d 430, 434, 255 N.E.2d 696, 700 (1969) (reliability of polygraph not adequately established). Despite the increased use of polygraph tests in business and government, more recent cases have declined to admit polygraph results. See *Pulakis v. State*, 476 P.2d 474, 479-80 (Alaska 1970) (polygraph results generally inadmissible, but can be waived); *Marsh v. Lake Forest Hosp.*, 166 Ill. App. 3d 70, 77, 519 N.E.2d 504, 509 (2d Dist. 1988) (polygraph results are discoverable, even though inadmissible at trial); *People v. Baynes*, 88 Ill. 2d 225, 238-39, 430 N.E.2d 1070, 1076-77 (1981) (polygraph test results inadmissible despite stipulation by parties); *State v. Marti*, 290 N.W.2d 570, 586-87 (Iowa 1980) (polygraph test results admissible by stipulation only); cf. *United States v. Oliver*, 525 F.2d 731, 737 (8th Cir. 1975), *cert. denied*, 424 U.S. 973 (1976) ("[w]e cannot conclude that the stipulated or consented to polygraph is so unreliable as to be inadmissible in this particular case.")

23. A "voiceprint" attempts to identify persons by their speech patterns. The test is based on the theory that individuals have distinct but largely stable voice patterns. Sound waves are recorded onto a graphic display, known as a spectrogram, that produces a verbal "picture" of the suspect. Courts are markedly split on the admissibility of this technique. See generally A. MOENSSENS AND F. INBAU, SCIENTIFIC EVIDENCE IN CRIMINAL CASES §§ 12.01-12.08 (2d ed. 1978); Annotation, *Admissibility and Weight of Voiceprint Evidence*, 97 A.L.R. 3d 294 (1980); Note, *supra* note 19, at 327. Most courts applying *Frye*, however, have held this controversial identification test inadmissible. Compare *United States v. Addison*, 498 F.2d 741, 745 (D.C. Cir. 1974); *People v. Kelly*, 17 Cal. 3d 24, 29-36, 549 P.2d 1240, 1247-48, 130 Cal. Rptr. 144, 151-52 (1976); *People v. King*, 266 Cal. App. 2d 437, 461, 72 Cal. Rptr. 478, 490 (1968); *Reed v. State*, 283 Md. 374, 399, 391 A.2d 364, 377 (1978) (all holding test inadmissible) with *United States v. Williams*, 583 F.2d 1194 (2d Cir. 1978); *United States v. Franks*, 511 F.2d 25 (6th Cir. 1975); *United States v. Jenkins*, 525 F.2d 819 (6th Cir. 1975); *United States v. Baller*, 519 F.2d 463 (4th Cir. 1975); *Commonwealth v. Lykus*, 367 Mass. 191, 327 N.E.2d 671 (1975); *State v. Williams*, 4 Ohio St. 2d 53, 446 N.E.2d 444 (1983) (all holding test admis-

sons,²⁵ DNA identification tests,²⁶ and numerous other forensic techniques.²⁷ In fact, until the 1970s, *Frye* remained relatively uncriticized.²⁸ Since then, the explosion of scientific advancement in a wide variety of fields has resulted in the increased use of newly developed scientific evidence at trial.²⁹ This increase highlights

sible). Illinois has yet to address directly this technique's admissibility. *People v. Ashford*, 121 Ill. 2d 55, 78, 520 N.E.2d 332, 341 (1988).

24. Residue tests, such as neutron-activation analysis, atomic absorption analysis, and trace metal detection tests, are used to determine, among other things, whether a person fired a gun. Neutron-activation analysis is used to identify the source from which a sample of material is taken. The object to be analyzed is made radioactive and the amount of each chemical element present in the sample is then measured. For further discussion of neutron-activation analysis see *United States v. Stifel*, 433 F.2d 431, 436, 438, 441 (6th Cir. 1970), *cert. denied*, 401 U.S. 994 (1971) (test results admissible to establish bomb fragments as having come from a particular manufacturer); *People v. Johnson*, 114 Ill. 2d 170, 499 N.E.2d 1377 (1986) (admissible to connect bullets to the cartridges from which they came); *State v. Stout*, 478 S.W.2d 368, 371 (Mo. 1972) (inadmissible for comparing blood stains); *Commonwealth v. Sero*, 478 Pa. 440, 449-50, 387 A.2d 63, 68 (1978) (admissible to detect gunshot residue). See also Annotation, *Admissibility and Weight, in Criminal Case, of Expert Scientific Evidence Respecting Characteristics and Identification of Human Hair*, 23 A.L.R. 4th 1199 (1983); Annotation, *Admissibility of Evidence of Neutron Activation Analysis*, 50 A.L.R. 3d 117 (1973).

Atomic absorption analysis is used to determine the type and quantity present in a given sample. The technique involves vaporizing a given sample, such as gunshot residue, into a light path. Once in the light path, the chemical composition of the sample may be determined. For cases determining the admissibility of atomic absorption analysis see *Chatom v. State*, 348 So. 2d 838, 842 (Ala. 1977); *State v. Chatman*, 156 N.J. Super. 35, 38-40, 383 A.2d 440, 441-42 (App. Div. 1978); *State v. Sparks*, 297 N.C. 314, 326-28, 255 S.E.2d 373, 380-82 (1979); *State v. McCall*, 698 S.W.2d 643, 651 (Tenn. Crim. App. 1985).

Trace metal detection tests (TMDT) that reveal the existence of metal particles on a subject's hands are often used to determine whether the subject recently fired a gun. The metal particles become visible under ultraviolet light after the hands are sprayed with a commercially prepared chemical solution. For a discussion on the admissibility of TMDT see *Reid v. State*, 267 Ind. 555, 558-60, 372 N.E.2d 1149, 1151-52 (1978); *State v. Snyder*, 190 N.J. Super. 626, 631-33, 464 A.2d 1209, 1211-12 (Law Div. 1983); *State v. Daniels*, 37 Ohio App. 2d 4, 5-6, 305 N.E.2d 497, 498 (1973); *Brotherton v. State*, 666 S.W.2d 126, 129-30 (14th Tex. Ct. App. 1983).

25. A bite mark can be used as a form of identification because every individual has a relatively unique dentition. *People v. Slone*, 76 Cal. App. 3d 611, 623, 143 Cal. Rptr. 61, 68-69 (1978); *People v. Milone*, 43 Ill. App. 3d 385, 394-98, 356 N.E.2d 1350, 1356-60 (2d Dist. 1976) (citing and distinguishing *Frye*). See Annotation, *Admissibility of Evidence Tending to Identify Accused by His Own Bite Marks*, 77 A.L.R. 3d 1122 (1977). Determining the relevant scientific field has been something of a problem in bite mark analysis cases. Compare *Slone* (citing "medical profession" as relevant field) with *Milone* (citing "dentistry" as the relevant field). Giannelli, *supra* note 11, at 1209 n.74. See *infra* notes 98-102 and accompanying text (discussing *Milone*). See generally *infra* notes 47-55 and accompanying text (differing definitions of relevant scientific community).

26. See *infra* notes 135-53 and accompanying text.

27. See Giannelli, *supra* note 11, at 1206 n.54.

28. See McCormick, *supra* note 20, at 883-85.

29. See W. BROAD AND N. WADE, *BETRAYERS OF THE TRUTH* 53 (1983); Giannelli,

both the benefits and drawbacks of the *Frye* analysis.³⁰

The foremost criticism of the *Frye* test is that its "general acceptance" requirement negates valid scientific techniques and prevents the admission of relevant evidence.³¹ Critics argue that because "general acceptance" of a new scientific technique takes time, the courts always will trail modern science.³² Thus, *Frye* is perceived by many to inhibit, rather than enhance, the search for truth.³³

Acknowledging that the "general acceptance" requirement sometimes may preclude the admission of valid, reliable scientific evidence, the proponents of *Frye* still perceive its conservative approach as a victory in caution.³⁴ Such a strict standard often is necessary, they argue, to prevent the admission of unreliable scientific evidence.³⁵ The proponents of the general acceptance theory of *Frye* would prefer to reject five valid techniques in order to en-

supra note 11, at 1198-1200; Imwinkelried, *supra* note 2, at 555; Jasanoff, *Science and The Courts: Advice For A Troubled Marriage*, 2 NAT. RESOURCES & ENV'T 3 (1986).

30. See *infra* notes 31-45 and accompanying text. See generally C. McCORMICK, *supra* note 8, § 203, at 606; Lipton, *The Results of Scientific Techniques as Evidence in Federal Courts: Evolution of the Frye v. United States Standard in the Period 1969-1977*, 8 ENVTL. L. 769 (1978).

31. Giannelli, *supra* note 11, at 1223-24.

32. See *United States v. Sample*, 378 F. Supp. 44, 53 (E.D. Pa. 1974) (citing C. McCORMICK, *supra* note 8, § 203, at 491) (general acceptance is an impractical way of using scientific advances); *Coppolino v. State*, 223 So. 2d 68, 75 (Fla. Dist. Ct. App. 1968), *appeal dismissed*, 234 So. 2d 120 (Fla. 1969), *cert. denied*, 399 U.S. 927 (1970) ("Society need not tolerate homicide until there develops a body of medical literature about some particular lethal agent"). See generally Maletskos & Spielman, *Introduction of New Scientific Methods in Court*, in LAW ENFORCEMENT SCI. AND TECH., 957, 958 (S.A. Yefsky ed. 1967) (referring to the time period between reliability and general acceptance as a "cultural lag"); Brown, *DNA and Kelly-Frye: Who Will Survive In California?*, 11 CRIM. 1, 27-29 (1988).

33. Lacey, *supra* note 19, at 265.

34. See Bretz, *Scientific Evidence and The Frye Rule: The Case For a Cautious Approach*, 4 COOLEY L. REV. 506, 513-14 (1987).

35. See *United States v. Addison*, 498 F.2d 741, 743 (D.C. Cir. 1974) (the conservative nature of *Frye* does not exact an unwarranted cost); *People v. Kelly*, 17 Cal. 3d 24, 31, 549 P.2d 1240, 1245, 130 Cal. Rptr. 144, 149 (1976) ("The primary advantage . . . of the *Frye* test lies in its essentially conservative nature. For a variety of reasons, *Frye* was deliberately intended to interpose a substantial obstacle to the unrestrained admission of evidence based upon new scientific principles. . . . Several reasons founded in logic and common sense support a posture of judicial caution in this area"); *Reed v. State*, 283 Md. 374, 384-85, 391 A.2d 364, 369 (1978) (although *Frye* may unduly prevent the admission of relevant scientific evidence, there are "compelling reasons" that justify the principle). See generally Giannelli, *supra* note 11, at 1223-24. *But see* Jonakait, *Will Blood Tell? Genetic Markers in Criminal Cases*, 31 EMORY L.J. 833, 845 (1982) ("Both proponents and detractors of *Frye* agree that a stringent legal standard assures that a scientific test is reliable before it is admitted. . . . however, the *Frye* standard is insufficient to assure reliability in the case of genetic marker tests. Whether these forensic procedures are reliable or not, *Frye* admits them.")

sure that not one invalid technique is admitted.³⁶ Those in favor of *Frye* also argue that general acceptance assures the availability of experts within the particular scientific field who can critically examine the validity and reliability of the scientific evidence.³⁷ These commentators further note that, under the *Frye* test, an initial ruling on the admissibility of evidence related to a particular technique will serve as precedent for subsequent trials; therefore, they claim that the *Frye* approach fosters judicial economy³⁸ and enhances judicial uniformity.³⁹

In response to these contentions, the opponents of *Frye* assert that the test is too amorphous to provide an orderly and uniform method of evaluating scientific evidence. They point out that the *Frye* test fails to specify what "thing" must be generally accepted, who must accept it, or what constitutes general acceptance.⁴⁰ The

36. For example, if the Nobel prize winner in a specific field conducts a thoroughly dispositive experiment to validate a new scientific technique, the courts cannot admit the evidence until most of the scientists in that specialized field know and approve of the theory. Imwinkelried, *supra* note 2, at 557. See also Imwinkelried, *Evidence Law and Tactics for the Proponents of Scientific Evidence*, in *SCI. AND EXPERT EVID.* 33, 43 (2d ed. 1981).

37. Brown, *supra* note 32, at 29. Proponents of *Frye* argue that assuring a "minimum reserve of experts" is for the benefit of both parties. Concerned that juries tend to give too much weight to scientific evidence, the proponents argue that a general acceptance standard will provide sufficient numbers of scientists in opposition to the evidence, thus ensuring the evidence that is admitted will be deserving of the considerable weight one would expect juries to give it. Addison, 498 F.2d at 744. See also Giannelli, *supra* note 11, at 1207-08 n.65. Opponents of *Frye* state that a less stringent standard could easily overcome its deficiencies by requiring "that the opposing party be provided with the opportunity to secure the testimony of qualified expert witnesses, thus guaranteeing a reserve of experts who can critically examine the validity of a scientific determination in a particular case." *Id.* See also C. MCCORMICK, *supra* note 8, § 203, at 608-09.

38. Brown, *supra* note 32, at 32. Under the *Frye* rule, once a novel technique is deemed admissible as evidence, it will receive judicial recognition that obviates future litigation on the matter. *Id.* See *People v. Kelly*, 17 Cal. 3d 24, 32, 130 Cal. Rptr. 144, 149, 549 P.2d 1240, 1245 (1976) ("once a trial court has admitted evidence based upon a new scientific technique, and that decision is affirmed on appeal by a published appellate decision, the precedent so established may control subsequent trials, at least until new evidence is presented reflecting a change in the attitude of the scientific community.") Opponents of *Frye* contend that such precedent would not obviate the long established practice of pre-trial evidentiary hearings. Brown, *supra* note 32, at 32 (citing C. MCCORMICK, *supra* note 8, § 205). Cf. Giannelli, *supra* note 11, at 1218 n.154 (judicial opinions from outside jurisdictions are merely persuasive and therefore do not necessarily streamline judicial consideration of the issue.)

39. *Kelly*, 17 Cal. 3d at 31, 549 P.2d at 1244-45, 130 Cal. Rptr. at 148-49. *Frye* advocates argue that the general acceptance test enhances judicial uniformity because judges who may differ in their interpretation of reliability may be guided by consistent agreement in the scientific community. *Id.* See also Comment, *The Voiceprint Dilemma: Should Voices Be Seen and Not Heard?*, 35 MD. L. REV. 267, 290 (1975). See generally Brown, *supra* note 32, at 31.

40. Note, *Novel Scientific Evidence: Does Frye Require That General Acceptance*

term general acceptance alone has been criticized for being "remarkably vague,"⁴¹ "undefinable,"⁴² and "based on an erroneous assumption."⁴³ Even the initial determination of whether the evidence in question is "scientific evidence," and therefore subject to the *Frye* test, has caused difficulties.⁴⁴ Critics of *Frye* claim that this lack of concreteness has resulted in selective application of the test and conflicting decisions.⁴⁵

III. APPLICATION OF *FRYE* IN JURISDICTIONS OTHER THAN ILLINOIS

Whichever side of the debate one happens to favor, the ambiguous nature of the *Frye* test has undisputedly led to multiple variations and abstractions. The *Frye* standard basically involves a two-step analysis: 1) identification of the scientific field in which the evidence belongs, and 2) determination of whether the evidence has been generally accepted by members of that field.⁴⁶ Depending upon how narrowly or broadly they construe these two steps, courts utilizing *Frye* run the gamut from strict application to outright rejection.

A. *The Scientific Field*

The identification of the relevant scientific community⁴⁷ from which to measure general acceptance often determines whether ev-

Within The Scientific Community Be Established By Disinterested Scientists?, 65 U. DET. L. REV. 147, 154 (1987).

41. 22 C. WRIGHT & K. GRAHAM, FEDERAL PRACTICE AND PROCEDURE: EVIDENCE § 5168, at 87 (1978). See Brown, *supra* note 32, at 32.

42. Strong, *Questions Affecting the Admissibility of Scientific Evidence*, 1970 U. ILL. L.F. 1, 14 (1970) ("The *Frye* standard . . . tends to obscure these proper considerations by asserting an undefinable general acceptance as the principle if not the sole determinative factor.")

43. Moenssens, *supra*, note 1, at 562 ("insistence on general acceptance is based on the erroneous assumption 'that the scientific community speaks with a single voice on the acceptance of novel scientific procedures'") (quoting *Symposium on Science and the Rules of Evidence*, 99 F.R.D. 187, 221 (1983)). See generally Brown, *supra* note 32, at 32.

44. See, e.g., *infra* notes 164-71 and accompanying text.

45. See McCormick, *supra* note 20, at 904 ("[t]he courts that have moved away from *Frye* have obviously done so because of a perception that the standard is too rigid, somewhat unclear, and an unnecessary and undesirable barrier to the admissibility of scientific evidence in some situations."); Black, *A Unified Theory of Scientific Evidence*, 56 FORDHAM L. REV. 595, 601 n.23 (1988). See also *infra* notes 47-63 and accompanying text.

46. Giannelli, *supra* note 11, at 1208.

47. The ambiguity inherent in the term "relevant scientific community" has resulted in an array of interpretations. See *Commonwealth v. Lykus*, 367 Mass. 191, 327 N.E.2d 671, 677-78, 682 (1975). See also *supra* note 25 for discussion of two differing views on the "relevant scientific field" in bite mark analysis cases.

idence will be admitted. If the relevant scientific field requirement is construed broadly, the *Frye* test acts as a formidable barrier to admissibility. In *Cornett v. State*,⁴⁸ for example, the relevant scientific community for purposes of spectrograph (voiceprint) analysis was held to include engineers, linguists, and psychologists, as well as those who use voice spectrography for identification purposes.⁴⁹ Because different disciplines do not share a common view of a particular scientific method, the burden of establishing general acceptance is undoubtedly onerous. Consequently, the broader the construction of the relevant scientific field, the less likely the party will be able to utilize the novel scientific evidence.⁵⁰

At the opposite end of the spectrum, some courts choose to identify the relevant scientific field with more particularity, resulting in a liberal application of the *Frye* standard. In *People v. Williams*,⁵¹ for example, a test used to detect narcotics use was subjected to the *Frye* analysis.⁵² Although the general medical profession was unfamiliar with the test, the court required general acceptance only among those expected to be familiar with its use.⁵³ By defining the scientific field in such a limited manner, courts can greatly enhance the possibility that scientific evidence will be admitted under the *Frye* standard.

The practice of using a narrow relevant field, however, can lead to a substantial departure from the *Frye* test because general acceptance may become, in reality, the opinion of a few experts.⁵⁴

48. 450 N.E.2d 498 (Ind. 1983).

49. *Id.* at 503 (citing *People v. Collins*, 94 Misc. 2d 704, 708, 405 N.Y.S.2d 365, 368 (1978)). See also *People v. King*, 266 Cal. App. 2d 437, 456, 72 Cal. Rptr. 478, 490 (1968) ("Communication by speech does not fall within any one established category of science. Its understanding requires a knowledge of anatomy, physiology, physics, psychology and linguistics.")

50. The voice spectrograph evidence was held inadmissible in *Cornett* for not having gained general acceptance in the scientific community as it was liberally defined. *Cornett*, 450 N.E.2d at 503. The D.C. Circuit applies *Frye* more conservatively by requiring general acceptance in the entire scientific community "as a whole." *United States v. Addison*, 498 F.2d 741, 745 (D.C. Cir. 1974). See also *infra* text accompanying note 57 ("substantial section of the scientific community needed").

51. 331 P.2d 251 (Cal. App. Dep't Super. Ct. 1958).

52. *Id.* at 253. The technique, known as the Nalline Test, detects recent narcotics use by measuring the dilation of a subject's pupils subsequent to an injection of Nalline (N-allylnormorphine). Pupil dilation indicates the recent use of narcotics. *Id.* at 252-53.

53. *Id.* at 254. *Accord* *Commonwealth v. Lykus*, 367 Mass. 191, 327 N.E.2d 671, 677 (1975) ("The requirement of the *Frye* rule of general acceptability is satisfied, in our opinion, if the principle is generally accepted by those who would be expected to be familiar with its use.")

54. *Giannelli*, *supra* note 11, at 1209-10. See also *Cornett*, 450 N.E.2d at 503 ("It is natural, of course, that the people actively employing the new scientific process are urging

Severely limiting the breadth of a scientific field could eliminate many acknowledged experts who oppose the technique. Allowing a court to ignore the opinions of scientists standing in opposition to the questioned process undermines the *Frye* test because contrary opinions held by qualified scientists may indicate a lack of general acceptance.⁵⁵

B. General Acceptance

Once the breadth of the scientific field has been determined, the court must decide whether the scientific technique has been generally accepted by that group.⁵⁶ As with the breadth of the scientific field, differing judicial interpretations of "general acceptance" have led to inconsistent applications of the *Frye* standard. Some courts have adopted a conservative approach, requiring acceptance by a "substantial section of the scientific community"⁵⁷ or by declaring that general acceptance may not be established without the testimony of disinterested scientists.⁵⁸ Other courts have taken a less extreme view, defining general acceptance as "common to many, or the greatest number; widespread; prevalent; extensive though

its introduction into evidence. However . . . it appears that only a small group of the same people testify again and again in order to get this evidence admitted.")

55. See *Reed v. State*, 283 Md. 374, 399, 391 A.2d 364, 377 (1978) (voice spectrograph inadmissible for failing to establish general acceptance). There is some indication that judicial ignorance of scientific opposition to the technique may be quite prevalent in criminal trials because usually only the prosecution produces expert testimony to support the scientific evidence. The trial judge generally assesses the acceptability of the technique on this one witness' testimony, who is not likely to identify uncertainties or inadequacies that may surround the technique. Moenssens, *supra* note 1, at 557. At least one reason for this is the potentially significant expense of obtaining expert testimony and the economic advantage the state possesses over many defendants. A Deputy District Attorney in San Diego estimated that one expert witness earned over \$100,000 for his testimony regarding electrophoretic multi-system testing of bloodstains. Brown, *supra* note 32, at 30 n.204.

56. See generally Giannelli, *supra* note 11, at 1211 ("Most courts applying *Frye* have not addressed the [general acceptance] issue adequately; they have either ignored it altogether or offered rather general statements.")

57. *United States v. Williams*, 443 F. Supp. 269, 273 (S.D.N.Y. 1977), *aff'd*, 583 F.2d 1194 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979); see also Giannelli, *supra* note 11, at 1211 n.95.

58. See *People v. Barbara*, 400 Mich. 352, 255 N.W.2d 171 (1977). A divided Michigan Supreme Court affirmed *Barbara* in *People v. Young*, 425 Mich. 470, 391 N.W.2d 270 (1986), relying on the *Frye* standard as well as its own self-imposed demand for experts whose livelihood is not "intimately connected with the new technique." *Young*, 425 Mich. at 483, 391 N.W.2d at 276 (citing *Barbara*, 400 Mich. at 376, 255 N.W.2d at 180). Illinois has rejected this approach. See *People v. Eyler*, 133 Ill. 2d 173, 215-16, 549 N.E.2d 268, 287 (1989). This approach is probably better termed as a departure from *Frye*, rather than a conservative application of it, because *Frye* never contemplated acceptance by disinterested scientists.

not universal.”⁵⁹ Still other courts have found general acceptance to be synonymous with reliability.⁶⁰ This very liberal interpretation essentially abandons the *Frye* standard because the reliability of a scientific technique could be established notwithstanding its lack of general acceptance in the scientific community.⁶¹ Similarly, other courts have determined that general acceptance goes to the evidence’s weight rather than its admissibility.⁶² Approaching scientific evidence in this manner eviscerates the *Frye* standard because general acceptance becomes merely one factor, rather than the preeminent criterion, to be considered when determining the admissibility of the scientific evidence. Finally, a few jurisdictions have expressly rejected the *Frye* test, leaving the determination of admissibility within the normal doctrine of relevancy or some other standard.⁶³

59. *United States v. Zeiger*, 350 F. Supp. 685, 688 (D.D.C.), *rev'd*, 475 F.2d 1280 (D.C. Cir.1972) (citing *Platt v. Craig*, 66 Ohio St. 75, 63 N.E. 594 (1902)); *Giannelli*, *supra* note 11, at 1211. *See also* *United States v. Stifel*, 433 F.2d 431, 438, 441 (6th Cir.), *cert. denied*, 401 U.S. 994 (1970) (finding admissibility despite testimony that the test was too unreliable or not sufficiently conclusive); *Coppolino v. State*, 223 So. 2d 68, 70-71 (Fla. Dist. Ct. App. 1968), *appeal dismissed*, 234 So. 2d 120 (Fla.), *cert. denied*, 399 U.S. 927 (1970) (trial judge did not abuse discretion in finding the scientific evidence reliable and generally accepted despite testimony to the contrary); *State v. Washington*, 229 Kan. 47, 55, 622 P.2d 986, 993 (1981) (holding the test “sufficiently accepted as reliable”). *See generally* C. McCORMICK, *supra* note 8, § 203, at 606.

60. *See United States v. Distler*, 671 F.2d 954 (6th Cir. 1981), *cert. denied*, 454 U.S. 827 (1981); *State v. Hurd*, 86 N.J. 525, 432 A.2d 86 (1981). In the Sixth Circuit, the court indicated that general acceptance was synonymous with reliability. *United States v. Franks*, 511 F.2d 25 (6th Cir. 1975) (admissibility of voiceprint evidence). Such a statement clearly represents an abandonment of *Frye*. This trend became more evident when the Sixth Circuit did not even mention the *Frye* analysis in *United States v. Jenkins*, 525 F.2d 819 (6th Cir. 1975) (evidence based upon ion microprobe analysis was inadmissible). The Sixth Circuit returned to the *Frye* analysis in *United States v. Brown*, 557 F.2d 541 (6th Cir. 1977), however, it did so without offering any underlying rationale. *Giannelli*, *supra* note 11, at 1220.

61. It is also possible that scientific evidence could be generally accepted but nevertheless unreliable. Consider, for example, the “paraffin test” that was designed to detect gunshot residue on a person’s hand. The court adopted and used it widely for at least twenty years until a comprehensive evaluation of the technique deemed it unreliable. *Giannelli*, *supra* note 11, at 1224-25. *See Jonakait*, *supra* note 35, at 854-57.

62. *See State v. Olivas*, 77 Ariz. 118, 119, 267 P.2d 893, 894 (1954); *People v. Marx*, 54 Cal. App. 3d 100, 110, 126 Cal. Rptr. 350, 355 (1975); *Jenkins v. State*, 156 Ga. App. 387, 388-89, 274 S.E.2d 618, 619-20 (1980); *People v. Johnson*, 114 Ill. 2d 170, 197, 499 N.E.2d 1355, 1367 (1986). *See generally* C. McCORMICK, *supra* note 8, § 203, at 606.

63. *See United States v. Downing*, 753 F.2d 1224, 1237 (3rd Cir. 1985) (*Frye* is “too malleable to provide the method for orderly and uniform decision-making envisioned by some of its proponents.”); *United States v. Williams*, 583 F.2d 1194, 1198 (2d Cir. 1978) (evaluating voiceprint evidence based on “the probativeness, materiality and reliability of the evidence, on one side, and any tendency to mislead, prejudice or confuse the jury on the other . . .”); *State v. Catanese*, 368 So. 2d 975, 981 (La. 1979) (rejected *Frye* and held polygraph evidence inadmissible because its probative value was outweighed by reasons

IV. *Frye* IN ILLINOIS: ACCEPTANCE OR GENERAL RELIABILITY?

The earliest case of record to consider the admissibility of scientific evidence in Illinois was *People v. Jennings*,⁶⁴ a 1911 case that predates *Frye*. Being the first court in the United States to address the admissibility of fingerprint evidence, the *Jennings* court concluded that the technique was admissible because of its reliability⁶⁵ and its common usage among law enforcement officials.⁶⁶ By requiring both reliability and acceptance, *Jennings* foreshadowed the now more popular *Frye* analysis. Both cases link the reliability of scientific evidence to the general acceptance of such evidence within a relevant scientific community.⁶⁷

Illinois' adoption of the *Frye* standard has been enigmatic. It was not until 1981,⁶⁸ in *People v. Baynes*,⁶⁹ that Illinois purportedly adopted the *Frye* test. In *Baynes*, the trial court admitted evidence resulting from a polygraph test pursuant to a stipulation between

for its exclusion); *Barmeyer v. Montana Power Co.*, 202 Mont. 185, 193, 657 P.2d 594, 598 (1983) (general acceptance rule does not conform to the spirit of the federal rules of evidence); *State v. Williams*, 4 Ohio St. 3d 53, 58, 446 N.E.2d 444, 447-48 (1983) ("scientific nose-counting" not required). See generally C. MCCORMICK, *supra* note 8, § 203, at 607.

64. 252 Ill. 534, 96 N.E. 1077 (1911). The standards set forth under *Jennings* regarding the admissibility of scientific evidence were not materially based upon any previous Illinois court decisions.

65. *Id.* at 546-47, 96 N.E. at 1081. The court stated that "standard authorities on scientific subjects discuss the use of fingerprints as a system of identification, concluding that experience has shown it to be reliable." *Id.*

66. *Id.* at 549, 96 N.E. at 1082. The court explained "that this method of identification is in such general and common use that the courts cannot refuse to take judicial cognizance of it." *Id.*

67. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923). See *supra* notes 15-20 and accompanying text.

68. In Illinois, historical data and case law pertaining to the admissibility of scientific evidence prior to the 1970s is relatively sparse. During this period, courts did not treat scientific evidence as a general category. Discussion of standards for admitting a technique were generally confined, i.e., application to other contexts was not addressed. See *People v. Zazzetta*, 27 Ill. 2d 302, 306, 189 N.E.2d 260, 263 (1963) (polygraph); *People v. White*, 365 Ill. 499, 6 N.E.2d 1015 (1937) (handwriting comparison); *People v. Fisher*, 340 Ill. 216, 172 N.E. 743 (1930) (expert testimony connecting bullet to gun from which it was fired); *People v. Pfanschmidt*, 252 Ill. 534, 404 N.E. 804 (1914) (results of bloodhound search not reliable and thus inadmissible); *Carleton v. People*, 251 Ill. 431, 96 N.E. 268 (1894) (footprint evidence); *Watt v. People*, 126 Ill. 9, 18 N.E. 340 (1888) (expert testimony regarding similarity of hair samples); *People v. Bobczyk*, 343 Ill. App. 504, 99 N.E.2d 567 (1951) (intoxication test admissible). See generally *Recent Illinois Decisions*, 31 CHI.-KENT L. REV. 188 (1952). An in-depth analysis of the admissibility of scientific evidence prior to the 1970s is beyond the scope of this Comment.

69. 88 Ill. 2d 225, 430 N.E.2d 1070 (1981).

the defendant and the prosecution.⁷⁰ The Illinois Supreme Court reversed, holding the polygraph results inadmissible despite the stipulation because of the test's disputed scientific reliability.⁷¹ The court stated that mutual agreement on the admission of scientific evidence does not make unreliable scientific evidence reliable.⁷²

Although subsequent cases have referred to *Baynes* as adopting the *Frye* standard,⁷³ a careful reading of the case indicates that this is not so. *Baynes* only cited *Frye* with approval and never explicitly extended *Frye's* application to scientific evidence beyond the polygraph test.⁷⁴ Nor did the court inquire whether the polygraph was generally accepted in the scientific community; rather, it merely concluded that the test was not reliable.⁷⁵ Reliability and general acceptance are not interchangeable constructs.⁷⁶ Moreover, *Baynes* was not the first Illinois court to consider the admissibility of polygraph evidence. Previous cases disallowed polygraph evidence, not because of its lack of general acceptance, but because it was not scientifically reliable.⁷⁷ The *Baynes* court used the same

70. *Id.* at 230, 430 N.E.2d at 1072. The test was also admitted without objection. *Id.* The defendant was arrested for burglarizing an unoccupied pickup truck. *Id.* at 229, 430 N.E.2d at 1072. He agreed to take a polygraph test and, in the opinion of the examiner, lied in response to certain relevant questions. *Id.* at 230, 430 N.E.2d at 1072. A jury found the defendant guilty of one count of burglary of a tachometer. *Id.* He was sentenced to five years imprisonment. *Id.*

71. *Id.* at 245, 430 N.E.2d at 1079. The court opined, "[i]f the instrument is accurate and the recording of the instrument's results reliable, then we should conclude it is acceptable. But the process has not reached a level of sophistication that makes it generally more probative than prejudicial." *Id.* at 239, 430 N.E.2d at 1077.

72. *Id.* at 239-40, 430 N.E.2d at 1077. The court stated "[b]y what logic should stipulated polygraph evidence be admitted if the same evidence, absent a stipulation, is barred? . . . If evidence is unreliable, agreeing to its admission does not make it reliable." *Id.* See also *Marsh v. Lake Forest Hosp.*, 166 Ill. App. 3d 70, 519 N.E.2d 504 (2d Dist. 1988) (polygraph results are discoverable even though they are inadmissible at trial).

73. See, e.g., *People v. Eyler*, 133 Ill. 2d 173, 211, 549 N.E.2d 268, 285 (1989) ("We have accepted the *Frye* standard for evaluating the admissibility of new scientific techniques."); *People v. Ferguson*, 172 Ill. App. 3d 1, 9, 526 N.E.2d 525, 530 (2d Dist. 1988) ("Illinois follows the test set forth in *Frye v. United States* . . .")

74. *Baynes*, 88 Ill. 2d at 234-35, 241, 430 N.E.2d at 1074, 1077. The court cited *Frye* mainly as evidence of an early case that described and rejected the technique. *Id.*

75. *Id.* at 244, 430 N.E.2d at 1079 ("Polygraph evidence is not reliable enough to be admitted.") In fact, the court does not even mention general acceptance (except for its quote of *Frye*).

76. See *supra* note 61 and accompanying text for a reference to scientific evidence that is generally accepted although unreliable.

77. See *Illinois Polygraph Soc'y v. Pellicano*, 83 Ill. 2d 130, 139, 414 N.E.2d 458, 463 (1980) ("There is still enough doubt about the reliability of detection-of-deception instruments, and the varying expertise of those who use them, to justify the General Assembly's decision to set minimum standards which prefer one instrument over another"); *People v. Zazzetta*, 27 Ill. 2d 302, 309, 189 N.E.2d 260, 264 (1963) ("[t]he scientific reliability of the polygraph has long been the subject of dispute among learned experts"); *People v.*

reasoning as these earlier cases, and gave no hint that Illinois would adopt a new general acceptance standard of admissibility.⁷⁸ Nevertheless, it is universally accepted that *Baynes* adopted the *Frye* standard.⁷⁹

The purported adoption⁸⁰ of *Frye* in *Baynes* and other subsequent lie detector test cases did not lead to its immediate application in other contexts. In *People v. Gibson*,⁸¹ for example, the defendant argued that the testimony of a witness who was hypnotized prior to trial, in an attempt to refresh her recollection, was admitted in error.⁸² The witness, who tentatively identified the de-

Monigan, 72 Ill. App. 3d 87, 95, 390 N.E.2d 562, 567 (5th Dist. 1979) ("We refuse to sustain such an evidentiary stipulation because it has not been demonstrated that the technique and processes used in a polygraph examination are scientifically reliable"); *People v. Potts*, 74 Ill. App. 2d 301, 306, 220 N.E.2d 251, 253 (5th Dist. 1966) ("The scientific reliability of the polygraph has long been the subject of dispute among learned experts."))

78. The court also noted that the Illinois General Assembly cast doubt on the technique's reliability by enacting a statute forbidding its use in criminal trials. *Baynes*, 88 Ill. 2d at 237, 430 N.E.2d at 1076 (citing ILL. REV. STAT. ch. 38, para. 155-11 (1977)).

79. Perhaps the reason for the confusion is that both *Baynes* and *Frye* involved lie detector tests, and in both cases the evidence was found inadmissible. Moreover, the difference between general acceptance and reliability is subtle. General acceptance ensures reliability; reliability can exist irrespective of general acceptance. *But see supra* note 61 (example of when unreliable evidence is generally accepted).

80. Because subsequent cases refer to *Baynes* as adopting the *Frye* standard, this Comment accepts that position for simplicity purposes. Furthermore, because subsequent cases have explicitly adopted *Frye*, the question is, as a practical matter, moot. *See, e.g., People v. Zayas*, 131 Ill. 2d 284, 546 N.E.2d 513 (1989).

81. 117 Ill. App. 3d 270, 452 N.E.2d 1368 (4th Dist. 1983).

82. *Gibson*, 117 Ill. App. 3d at 272, 452 N.E.2d at 1371. *See generally* Alderman & Barrette, *Hypnosis on Trial: A Practical Perspective on the Application of Forensic Hypnosis in Criminal Cases*, 18 CRIM. L. BULL. 5 (1982); Diamond, *Inherent Problems in the Use of Pretrial Hypnosis on a Prospective Witness*, 68 CALIF. L. REV. 313 (1980); Mickenberg, *Mesmerizing Justice: The Use of Hypnotically-Induced Testimony in Criminal Trials*, 34 SYRACUSE L. REV. 927 (1983); Orne, *The Use & Misuse of Hypnosis in Court*, 27 INT'L J. OF CLINICAL & EXPERIMENTAL HYPNOSIS 312 (1979); Ruffra, *Hypnotically Induced Testimony: Should It Be Admitted*, 19 CRIM. L. BULL. 293 (1983); Recent Development, *Growing Disenchantment with Hypnotic Means of Refreshing Recall*, 41 VAND. L. REV. 379 (1988). In *Rock v. Arkansas*, 483 U.S. 44 (1987), the Supreme Court addressed the constitutionality of an Arkansas rule of evidence barring admission of an accused's hypnotically refreshed testimony. The Court held that the rule violated the defendant's constitutional right to testify. *Id.* The dissent argued that "a rule designed to exclude testimony whose trustworthiness is inherently suspect" was not an unreasonable restriction on a defendant's right to testify. *Id.* at 64 (Rehnquist, C.J., dissenting). The *Rock* decision may cast a shadow on the future of *Frye*. One commentator noted that:

[a]lthough the court in *Rock* expressly limited its holding to cases involving the testimony of a defendant, to the extent that a defendant's right to testify is based upon her sixth amendment right to call witnesses in her favor, the Court's prohibition . . . logically applies to the testimony in general of defense witnesses. Consequently, *Rock* casts doubt upon the constitutionality of the *Frye* rule as applied to defense experts.

fendant previously, made a positive identification following a hypnotic session.⁸³

In determining the admissibility of the testimony, the court considered the defendant's contention that hypnotism presented the same problem of admissibility as lie detector tests or other scientific tests.⁸⁴ Thus, the defendant argued, its admissibility would require proof that the technique was generally accepted in the scientific community that developed it. The court explicitly rejected this approach, reasoning that *Frye* is concerned with the admissibility of the results from a scientific technique and not the admissibility of eyewitness testimony.⁸⁵ In the court's opinion, hypnotically induced testimony was not "scientific evidence" subject to the *Frye* standard. Therefore, the court admitted the testimony after the hypnotic session without a showing of the general acceptance of hypnosis.⁸⁶

In *People v. Zayas*,⁸⁷ the Illinois Supreme Court tacitly overturned *Gibson* and cases adopting its rationale. The court applied a *Frye* analysis⁸⁸ to hypnotically induced testimony⁸⁹ and concluded that because hypnotically induced recall is not generally accepted as accurate, it is not admissible.⁹⁰ The court cited with approval other jurisdictions that "properly applie[d]" the standard set forth

Leading Cases: Constitutional Law, 101 HARV. L. REV. 119, 125 (1987).

83. 117 Ill. App. 3d at 273, 452 N.E.2d at 1371.

84. *Id.* at 275, 452 N.E.2d at 1372.

85. *Id.* at 276, 452 N.E.2d at 1373. Additionally, the court opined that a procedure's reliability in a given situation is more important than its theoretical general reliability. *Id.*

86. In *People v. Cohoon*, 120 Ill. App. 3d 62, 457 N.E.2d 998 (5th Dist. 1983), the court reaffirmed *Gibson*, admitting into evidence a victim's identification of the defendant even though the victim had been hypnotized by a police officer who had only thirty hours of training in hypnosis. *Id.* at 65, 457 N.E.2d at 1000-02.

87. 131 Ill. 2d 284, 546 N.E.2d 513 (1989). See also *People v. Wilson*, 116 Ill. 2d 29, 42-49, 506 N.E.2d 571, 577-78 (1987) (outlining the law in other jurisdictions).

88. The court blithely equated the *Frye* test with *Baynes*. *Zayas* at 293, 546 N.E.2d at 517. See *supra* notes 73-79 and accompanying text (discussing *Baynes* in relation to *Frye*), *infra* notes 185-95 and accompanying text (discussing problems caused by uncertainty as to whether Illinois requires scientific evidence to be reliable or generally accepted).

89. *Zayas*, 131 Ill. 2d at 293-96, 546 N.E.2d at 517-18.

90. *Id.* at 294-95, 546 N.E.2d at 518. Rejecting the notion that this type of testimony is accurate, the court stated that:

[t]he relevant scientific community does not generally accept that hypnotically induced recall is accurate As such, we find that because its reliability is suspect, and it is not amenable to verification due to the fact that even the experts cannot agree upon its effectiveness as a memory-restorative device, a witness' hypnotically induced testimony, other than that of the defendant, is not admissible in Illinois courts.

Id.

in *Frye*⁹¹ and held that this standard would be applied to hypnotic testimony in Illinois.⁹²

Hypnotically induced testimony is not the only type of evidence to which the Illinois courts have been unwilling to apply the *Frye* standard. The courts also have been unwilling to apply *Frye* to visual evidence. Contemporaneous with the *Gibson* decision, the first district considered the admissibility of a handprint for identification purposes.⁹³ In *People v. Columbo*, the defendant argued that scientific evidence in the form of handprint measurements lacked general acceptance in the scientific community.⁹⁴ Specifically, the only expert rendering an opinion on the handprint conceded that he never performed such an analysis previously, never heard of such an identification being done by anyone else, and never read anything about the technique in a professional journal.⁹⁵ Nevertheless, the court concluded that the evidence was admissible on the grounds that *Frye* applied only to evidence derived from the interpretation of mechanical data and not from mere visual comparison.⁹⁶ The court reasoned that evidence involving such a visual comparison does not carry the same dangers of prejudicing and overwhelming the jury as evidence involving mechanical equipment.⁹⁷

The *Columbo* court relied predominantly on *People v. Milone*,⁹⁸ a case involving bite mark analysis. In *Milone*, the State introduced evidence that matched a bite mark on the deceased to the

91. *Id.* at 293, 516 N.E.2d at 517.

92. *Id.* at 294, 516 N.E.2d at 518.

93. 118 Ill. App. 3d 882, 455 N.E.2d 733 (1st Dist. 1983). Defendant Patricia Columbo was found guilty of the murders of her mother, father, and brother. *Id.* at 886, 455 N.E.2d at 740.

94. *Id.* at 957, 455 N.E.2d at 788. The handprint analysis involved ostensibly more than just measurements; the expert used his knowledge of the human skeleton to conclude that the handprint made on the trunk of a car was missing an index finger, and that it "could not have been made by someone holding his index finger up off the surface because the underlying bone in the palm of the hand was present on the surface of the car." *Id.* at 957, 455 N.E.2d at 787.

95. *Id.* at 961, 455 N.E.2d at 790. The expert was a professor of physical anthropology at the University of Illinois in Champaign-Urbana. *Id.* at 905, 455 N.E.2d at 752.

96. *Id.* at 960, 455 N.E.2d at 790. The *Columbo* court even went so far as to "conclude that expert testimony regarding the results of a scientific process in which there are no intermediate mechanical stages is admissible *once a competent expert testifies that the scientific process in question is reliable.*" *Id.* (emphasis added). See *infra* notes 183-84 and accompanying text (discussion of this statement's effect).

97. See *Columbo*, 118 Ill. App. 3d at 957-58, 455 N.E.2d at 789 ("It is our opinion that the inherent unreliability of mechanical equipment renders these cases inapposite to the case at bar.")

98. 43 Ill. App. 3d 385, 356 N.E.2d 1350 (2d Dist. 1976).

defendant's dentition.⁹⁹ The defendant argued that this evidence was inadmissible because it failed to meet either the *Frye* general acceptance or the *Jennings* reliability requirements.¹⁰⁰ The court rejected the defendant's argument and held that the evidence was admissible. The court reasoned that expert testimony regarding the visual comparison between the bite mark and the defendant's dentition served only to lend assistance to the trial court in interpreting physical evidence; there was no "intermediate mechanical stage" in which reliability could have been questioned.¹⁰¹ Thus, *Jennings* and *Frye* did not apply. The *Milone* court glossed over the similar visual comparison involved in *Jennings*.¹⁰²

Perhaps the biggest problem with the appellate court's attempt to limit *Frye*'s application to scientific techniques involving only an intermediate mechanical stage¹⁰³ is lack of uniformity. Blood spatter analysis,¹⁰⁴ for example, is used to determine the direction from which a person has been shot by observing the way blood splatters on nearby objects.¹⁰⁵ Although this process involves only a visual

99. *Id.* at 392, 356 N.E.2d at 1355. The defendant was convicted for the appallingly brutal beating and murder of a fourteen-year old girl and was sentenced to 90 to 175 years imprisonment. *Id.* at 386-87, 356 N.E.2d at 1351-52. In addition to much circumstantial evidence implicating the defendant, the State compiled over 1300 pages of dental testimony correlating a bite mark on the victim's inner thigh and the defendant's dentition. *Id.* at 392, 356 N.E.2d at 1355.

100. *Id.* at 394, 356 N.E.2d at 1356-57. The *Milone* decision predated *Baynes*. Also, referring to *Jennings* as a "reliability" standard is an oversimplification. As discussed *supra* notes 65-67 and accompanying text, it may very well be that *Jennings* required general acceptance as well as reliability.

101. *Milone*, 43 Ill. App. 3d at 396, 356 N.E.2d at 1358.

102. *Milone* distinguished *Jennings* and *Frye* by claiming that bite mark evidence "is more analogous to footprint, fingerprint, and hair comparisons. . . ." *Id.*

103. As evidenced by *Columbo* and *Milone*.

104. In addition to blood spatter analysis, Horizontal Gaze Nystagmus (HGN) is another area in which the appellate court has ignored its own determination that *Frye* does not apply to scientific evidence involving only visual comparison. HGN is a field-sobriety test in which a subject visually follows a pen or pencil held by a police officer as it is moved horizontally back and forth in front of the subject. Basically, eye movement that jerks or is not smooth indicates that the subject is not sober. In *People v. Vega*, 145 Ill. App. 3d 996, 1000, 496 N.E.2d 501, 504-05 (4th Dist. 1986), the court noted in dicta that, although *Frye* was the appropriate standard of admissibility, it could not be applied to the admissibility of HGN due to insufficient evidence in the record. *Id.* at 1001, 496 N.E.2d at 505. *People v. Dakuras*, 172 Ill. App. 3d 865, 868-70, 527 N.E.2d 163, 165-66 (2d Dist. 1988), likewise sidestepped an application of *Frye* by holding HGN inconsistent with an Illinois statute limiting sobriety tests to a person's blood, urine, breath, or other bodily substance. *Id.* at 869, 527 N.E.2d at 166 (citing ILL. REV. STAT. ch. 95 1/2, para. 11-501.2 (1987)). See also *People v. Furness*, 172 Ill. App. 3d 845, 849, 526 N.E.2d 947, 949 (5th Dist. 1988) (although no cases have directly addressed the issue of HGN's general acceptance in the scientific community, it is acceptable for establishing probable cause for arrest). *Id.*

105. See generally A. MOENSSENS & F. INBAU, *supra* note 23.

analysis, Illinois courts addressing the technique's admissibility have applied either the *Frye* general acceptance or the *Jennings* reliability¹⁰⁶ standard, thereby ignoring the intermediate mechanical stage theory *Columbo* and *Milone* developed. The only Illinois case to allow blood-spatter evidence is *People v. Knox*.¹⁰⁷ Citing the *Frye* general acceptance standard,¹⁰⁸ the *Knox* court concluded that the trial court made an informed decision regarding the "reliability" of the evidence and, in doing so, did not abuse its discretion.¹⁰⁹ Three years later, the court in *People v. Owens*¹¹⁰ held the same blood spatter technique to be inadmissible on the grounds that the State failed to establish the technique was based upon a well-recognized scientific principle having general acceptance in the relevant scientific field.¹¹¹

Thus, two non-intermediate mechanical stage cases apply *Frye* and ignore *Columbo* and *Milone*. One case admits the blood spatter evidence because it meets the "reliability" aspect of *Frye*;¹¹² the second rejects the blood spatter evidence because it fails to meet the "general acceptance" component of *Frye*.¹¹³ These cases illustrate that *Frye* is applied selectively and interpreted inconsistently.

*People v. Ferguson*¹¹⁴ was the first case to recognize that some decisions have applied *Frye* regardless of the type of scientific evidence considered, while others have drawn a distinction between evidence involving visual comparison and evidence containing an intermediate mechanical stage.¹¹⁵ *Ferguson* considered the admissibility of expert testimony regarding shoe-wear patterns, the theory being that identification may be made by comparing shoe-wear patterns from different pairs of a person's shoes because wear patterns are unique.¹¹⁶

106. See *supra* note 100 (referring to *Jennings* only as a reliability standard is inaccurate).

107. 121 Ill. App. 3d 579, 459 N.E.2d 1077 (3d Dist. 1984).

108. Actually, the court cited *Baynes* but interpreted that case to require general acceptance. See *Knox*, 121 Ill. App. 3d at 583, 459 N.E.2d at 1080.

109. *Id.* at 583, 584, 459 N.E.2d at 1080, 1081. See *supra* notes 60-61 and accompanying text (it is inaccurate to equate *Frye*'s general acceptance standard with a reliability standard).

110. 155 Ill. App. 3d 990, 508 N.E.2d 1088 (4th Dist. 1987).

111. *Id.* at 998-99, 508 N.E.2d at 1094.

112. *Knox*, 121 Ill. App. 3d at 583, 584, 459 N.E.2d at 1080, 1081.

113. *Owens*, 155 Ill. App. 3d at 998-99, 508 N.E.2d at 1094-95.

114. 172 Ill. App. 3d 1, 526 N.E.2d 525 (2d Dist. 1988).

115. *Id.* at 10, 526 N.E.2d at 531-32.

116. *Id.* at 5-6, 526 N.E.2d at 528-29. This is not the same as shoe print identification, which compares a shoe print with the shoe suspected of making that print. Generally, Illinois admits shoe print identifications. See *Ferguson*, 172 Ill. App. 3d at 8, 526 N.E.2d at 530 (citing *People v. Hanson*, 31 Ill. 2d 31, 39-40, 198 N.E.2d 815, 819-20

After explicitly stating that Illinois had adopted the *Frye* test, the court held that shoe-wear identification had not gained general acceptance in the scientific field. In reaching its conclusion that the expert's testimony should be excluded,¹¹⁷ the *Ferguson* court also reviewed the line of Illinois cases adopting a non-intermediate mechanical stage exception to the *Frye* test.¹¹⁸ The court noted that these cases depend on the "reliability" standard created in *Jennings*.¹¹⁹ Even the less stringent *Jennings* standard, however, would not permit the evidence to be admitted.¹²⁰

Thus, courts applying *Frye* have utilized one of two theories. Some courts have applied *Frye* to all scientific evidence; others have applied it only to scientific evidence involving an intermediate mechanical stage. This dichotomy continues to be a source of confusion for Illinois courts.¹²¹ In *People v. Sandy*,¹²² for example, a doctor was permitted to testify about "tin ear syndrome," a new

(1964)); *People v. Diaz*, 169 Ill. App. 3d 66, 71, 522 N.E.2d 1386, 1390 (2d Dist. 1988); *People v. Henne*, 165 Ill. App. 3d 315, 325, 518 N.E.2d 1276, 1282 (4th Dist. 1988); *People v. Ricketts*, 109 Ill. App. 3d 992, 997-98, 441 N.E.2d 384, 387-88 (4th Dist. 1982); *People v. Gordon*, 94 Ill. App. 3d 764, 766, 419 N.E.2d 66, 68-69 (3d Dist. 1981); *People v. Lomas*, 92 Ill. App. 3d 957, 959-60, 416 N.E.2d 408, 411 (3d Dist. 1981); *People v. Robbins*, 21 Ill. App. 3d 317, 321-23, 315 N.E.2d 198, 201-03 (3d Dist. 1974); *People v. Stanbeary*, 126 Ill. App. 2d 244, 250, 261 N.E.2d 765, 768 (4th Dist. 1970). See generally Annotation, *Admissibility of Expert Testimony that item of clothing or footwear belonged to, or was worn by, particular individual*, 71 A.L.R. 4th 1148 (1989). Cf. Annotation, *Admissibility of Bare Footprint Evidence*, 45 A.L.R. 4th 1178 (1986) (analyzing cases outside of Illinois discussing the admissibility of bare footprint evidence).

117. *Ferguson*, 172 Ill. App. 3d at 9, 526 N.E.2d at 531. The expert was unaware of any studies done on the subject other than her own. According to the expert's own testimony, she was the only individual in the anthropological community who believed that a person could be identified by their shoe wear pattern. *Id.*

118. *Id.* at 10-11, 526 N.E.2d at 532.

119. *Id.*

120. *Id.* at 11, 526 N.E.2d at 532.

121. In some instances, the *Frye* standard is ignored even though an intermediate mechanical stage is clearly present. In *People v. Johnson*, 114 Ill. 2d 170, 499 N.E.2d 1355 (1986), for example, the court held admissible evidence derived from neutron-activation analysis because of its reliability and its acceptance by a majority of other jurisdictions. *Id.* at 197, 499 N.E.2d at 1367 ("neutron activation analysis has come to be accepted as a consistently reliable forensic-science technique, with a majority of jurisdictions holding that the results of such tests are admissible in criminal proceedings.") See *supra* note 24 for an explanation of the technique. General acceptance in the relevant scientific field was not discussed. Also, in *People v. Cole*, 170 Ill. App. 3d 912, 524 N.E.2d 926 (1st Dist. 1988), the court applied the same reasoning as *Johnson* to declare that atomic absorption analysis was admissible in Illinois for the purpose of determining whether a suspect handled or fired a weapon. *Id.* at 928, 524 N.E.2d at 935-36. See also *People v. Ross*, 191 Ill. App. 3d 1046, 548 N.E.2d 527 (1st Dist. 1989).

122. 188 Ill. App. 3d 833, 544 N.E.2d 1248 (4th Dist. 1989). See also *People v. Israel*, 181 Ill. App. 3d 851, 861-62, 537 N.E.2d 1124, 1131 (2d Dist. 1989), which stated that because the *Frye* standard applied to "whether a scientific principle, technique, or test" is generally accepted, expert testimony placing a numerical score on the level of risk

theory regarding pediatric head injuries.¹²³ This recently developed¹²⁴ theory was based upon a study of three similarly injured children.¹²⁵ One article discussing the syndrome had been written for a medical journal and an abstract was in the process of publication at the time of trial.¹²⁶ The *Sandy* court dutifully recognized the *Frye* standard as well as the less stringent standard that the appellate courts had applied in lieu of the *Frye* test for cases not involving an intermediate mechanical step.¹²⁷ It also indicated that "newness alone [does] not make the technique inadmissible, and every theory must have its first day in court."¹²⁸ The court concluded that the evidence was admissible without explicitly stating whether the court was following the "less stringent" standard of *Jennings*, the more restrictive standard of *Frye*, or its own variation of *Frye*.¹²⁹

Despite the general difference in the applications of the *Frye* test, one line of cases in Illinois has applied *Frye* in a consistent manner. These cases have identified the *Frye* test as the appropriate standard to determine the admissibility of electrophoresis, a blood-testing technique that can classify blood more specifically than the traditional A, B, and O blood grouping method.¹³⁰ The court first

that the defendant posed to the community was not subject to the *Frye* analysis. *Id.* (emphasis in original).

123. *Sandy*, 188 Ill. App. 3d at 845, 544 N.E.2d at 1256. "Tin ear syndrome" is an injury resulting from a combination of a physical impact to the head, shaking, and rotation of the head. *Id.* at 839, 544 N.E.2d at 1251.

124. At the time of trial, the tin ear syndrome theory had been in existence for six months. *Sandy*, 188 Ill. App. 3d at 839, 544 N.E.2d at 1251.

125. *Id.*

126. *Id.*

127. *Id.*

128. *Id.* at 846, 544 N.E.2d at 1256 (citing *United States v. Stifel*, 433 F.2d 431 (6th Cir. 1970), which admitted the results of neutron-activation analysis despite its recent origins).

129. *Id.* at 846-47, 544 N.E.2d at 1256. The *Sandy* court cryptically stated that, although the theory was new, it employed tests and methods generally accepted. Further, tin ear syndrome bore a resemblance to the "shaken child syndrome" about which much was written. *Id.*

130. Electrophoresis involves the application of an electrical current to a blood sample for a period of time, causing the enzymes to separate into their protein components. *Robinson v. State*, 47 Md. App. 558, 574, 425 A.2d 211, 220 (1981). The enzymes and proteins are then sorted and classified. *Id.* A similar principle is used in DNA "fingerprinting." See generally *Jonakait*, *supra* note 35, at 833; Annotation, *Admissibility, in Criminal Cases, of Evidence of Electrophoresis of Dried Evidentiary Bloodstains*, 66 A.L.R. 4th (1988). Illinois has taken judicial notice of the reliability of the ABO blood grouping system. See *People v. Bush*, 103 Ill. App. 3d 5, 430 N.E.2d 514 (5th Dist. 1982); *People v. Gillespie*, 24 Ill. App. 3d 567, 321 N.E.2d 398 (2d Dist. 1974). For a comprehensive review of the admissibility of the ABO blood test in other jurisdictions see

addressed the admissibility of this test in *People v. Harbold*.¹³¹ Applying the *Frye* general acceptance standard, the *Harbold* court concluded that the widespread use of electrophoresis in crime laboratories alone could not justify admitting the test results in the face of scientific dispute over the technique's reliability.¹³² Three years later, in *People v. Partee*,¹³³ the court held that electrophoresis is generally accepted by forensic scientists as a reliable scientific technique and therefore is admissible in Illinois.¹³⁴

Appellate review of Illinois' application of *Frye* to cases involving genetic DNA identification tests¹³⁵ is forthcoming.¹³⁶ The

Annotation, *Admissibility, Weight, and Sufficiency of Blood Grouping Tests in Criminal Cases*, 2 A.L.R. 4th 500 (1980).

131. 124 Ill. App. 3d 363, 464 N.E.2d 734 (1st Dist. 1984). More accurately, *Harbold* was the first case after *People v. Baynes*, 88 Ill. 2d 225, 430 N.E.2d 1070 (1980) to consider the admissibility of electrophoresis. See *supra* notes 69-79 and accompanying text (discussion of how *Baynes* purportedly adopted *Frye*). *People v. LaSumba*, 92 Ill. App. 3d 621, 414 N.E.2d 1318 (4th Dist.), cert. denied, 454 U.S. 849 (1980), was the first case to address the admissibility of evidence derived from electrophoresis.

132. *Harbold*, 124 Ill. App. 3d at 379, 464 N.E.2d at 747. The court stated that, [w]e cannot hold that electrophoretic detection of genetic markers in field conditions is unreliable as a matter of law, but we believe that some questions as to scientific acceptance of the technique remain unanswered in this record and in the case law. Should the State elect to retry this case, we believe that the defendant and the people would be well served by the careful evaluation of this evidence, mindful of . . . *Frye v. United States*.

Id. at 381, 464 N.E.2d at 748.

The following year, in *People v. Redman*, 135 Ill. App. 3d 534, 481 N.E.2d 1272 (4th Dist. 1985), the court accepted the "reliability" of the electrophoretic technique. *Id.* at 539, 481 N.E.2d at 1276. *Redman* is the only exception to the statement that *Frye* has been applied regularly in cases involving the admissibility of electrophoresis. The court did not cite *Frye* or *Baynes*, instead it relied on *People v. LaSumba*, 92 Ill. App. 3d 621, 414 N.E.2d 1318 (4th Dist.), cert. denied, 454 U.S. 849 (1980), a case which predated *Baynes*. *Redman*, 135 Ill. App. 3d at 539, 481 N.E.2d at 1276. The *LaSumba* court held that the State met its burden of establishing "that the probative value of the evidence would outweigh any prejudice or confusion that could result from its introduction." *LaSumba*, 92 Ill. App. 3d at 626, 414 N.E.2d at 1322.

133. 157 Ill. App. 3d 231, 511 N.E.2d 1165 (1st Dist. 1987).

134. *Id.* at 261, 511 N.E.2d at 1185. The court indicated that questions existing when *Harbold* was decided had since been answered. *Id.* at 262, 511 N.E.2d at 1185. See also *People v. Eycler*, 133 Ill. 2d 173, 215-16, 549 N.E.2d 268, 287 (1989) (general acceptance and reliability of electrophoretic testing need not be established by impartial, disinterested scientists); *People v. Generally*, 170 Ill. App. 3d 668, 674, 525 N.E.2d 106, 109 (5th Dist. 1988) (admission of electrophoresis test results upheld); *People v. Bradney*, 170 Ill. App. 3d 839, 861, 525 N.E.2d 112, 126 (4th Dist. 1988) (scientific community has generally accepted electrophoretic analysis of dried bloodstains).

135. DNA profiling, commonly but perhaps inaccurately known as DNA "fingerprinting," is a modern identification technique that developed as a result of human genetics research. Burk, *DNA Fingerprinting: Possibilities and Pitfalls of a New Technique*, 28 JURIMETRICS 455, 455 (1988) (citing Jeffreys, Wilson & Thein, *DNA Fingerprints and Segregation of Multiple Markers in Human Pedigrees* 39 AM. J. HUM. GEN. 11 (1986)). The human body is composed of cells, each of which contains all the information needed

highly publicized Gary Dotson¹³⁷ and Jeanine Nicarico¹³⁸ cases

to produce a complete human body. Kelly, Rankin & Wink, *Method and Applications of DNA Fingerprinting: A Guide for the Non-Scientist*, Feb. 1987 CRIM. L. REV. 105, 105. This information serves as a "human blueprint" that is carried in chromosomes composed of deoxyribonucleic acid (DNA). *Id.* In short, DNA "contains the chemically encoded genetic information that determines each individual's physical makeup." Comment, *DNA Printing: The Unexamined "Witness" in Criminal Trials*, 77 CAL. L. REV. 665, 667 (1989) (citing J. WATSON, MOLECULAR BIOLOGY OF THE GENE 255 (2d ed. 1970)).

The mechanics of DNA profiling, at its simplest level, consist of isolating fragments of the DNA molecule through electrophoresis and a series of chemical procedures. The fragments then are subject to a manufactured, radioactive DNA "probe" that seeks out and binds to certain appropriate DNA fragments. The resultant bands ultimately are viewed and become the "fingerprint" from which identification is made. Hoeffel, *The Dark Side of DNA Profiling: Unreliable Scientific Evidence Meets the Criminal Defendant*, 42 STAN. L. REV. 465, 471-75 (1990). For a more detailed scientific discussion of the technique see D. WEATHERALL, THE NEW GENETICS AND CLINICAL PRACTICE (2d ed. 1985). See also Gill, Jeffreys & Werrett, *Forensic Application of DNA 'Fingerprints'*, 318 NATURE 577 (1985); Gill, Lygo, Fowler, & Werrett, *An Evaluation of DNA Fingerprinting for Forensic Purposes*, 8 ELECTROPHORESIS 38 (1987); M. Hibbs, *Applications of DNA Fingerprinting: Truth Will Out*, 139 NEW L. J. 619 (1989); Thompson & Ford, *DNA Typing: Acceptance and Weight of the New Genetic Identification Tests*, 75 VA. L. REV. 45, 65-76 (1989); Williams, *DNA Fingerprinting: A Revolutionary Technique in Forensic Science and Its Probable Effects on Criminal Evidentiary Law*, 37 DRAKE L. REV. 1 (1988); Comment, *DNA Identification Tests and the Courts*, 63 WASH. L. REV. 903 (1988); Annotation, *Admissibility, In Prosecution For Sex-Related Offense, of Results of Tests on Semen or Seminal Fluids*, 75 A.L.R. 4th 897, 948-49 (1990).

136. Telephone interview with Thomas J. Difanis, Illinois State's Attorney, Champaign County (March 29 1989).

137. Dotson was convicted in 1979 for the rape of Cathleen Crowell Webb. The case appeared to be very straightforward: the victim positively identified her assailant, and her story was supported by ample physical evidence. Frossard, *When the Accuser Recants: People v. Dotson*, 14 LITIGATION 11 (Summer, 1988). In 1985, however, Webb recanted her testimony against Dotson, claiming that she had lied. *Id.* Dotson's motion for post-conviction relief was denied on the grounds that the recantation was not believable. *Id.* at 59.

In 1988, Illinois Governor James Thompson and Cook County prosecutors supported Dotson's request for DNA genetic testing on blood samples and semen stains. The tests, conducted by Alec Jeffreys (creator of the technique) in London, were inconclusive. [Editor's Note: Further tests suggested that Dotson did not commit the crime. Prosecutors dropped the case against him and today, he is a free man. See Gorner & Kotulak, *Gene Screening: A Chance to Map Our Body's Future*, Chicago Tribune, April 15, 1990, at 1, zone C.]

For a thorough analysis of the Dotson case see J. Taylor, *Rape and Women's Credibility: Problems of Recantations and False Accusations Echoed in the Case of Cathleen Crowell Webb and Gary Dotson*, 10 HARV. WOMEN'S L.J. 59 (1987). See also Comment, *Gary Dotson as Victim: The Legal Response to Recanting Testimony*, 35 EMORY L.J. 969 (1986); Comment, *DNA Printing*, *supra* note 135, at 694-95.

138. Ten-year-old Jeanine Nicarico was abducted, raped, and brutally murdered in 1983. Two of the three defendants, initially convicted and placed on Death Row, obtained a reversal by the Illinois Supreme Court on the grounds that they should have been tried separately. *People v. Hernandez*, 121 Ill. 2d 293 (1988) and *People v. Cruz*, 121 Ill. 2d 328 (1988).

At the second trial, DNA test results were introduced into evidence. The tests elimi-

have utilized the technique, proclaimed as "the greatest boon to forensic medicine and law since fingerprinting."¹³⁹ The recent trial of Vincent Lipscomb, the alleged "campus rapist" who terrorized the University of Illinois community in 1988,¹⁴⁰ has brought the issue of DNA evidence's admissibility to the forefront. Lipscomb was arrested for rape, and it took the jury seventy-five minutes to reach a verdict that was based substantially on DNA fingerprinting evidence.¹⁴¹

Illinois, however, is not the first state to utilize DNA fingerprinting as evidence of a crime. Prior to 1990, DNA testing data has been used as evidence in over eighty criminal rape and murder trials in twenty-seven states, and has led to at least sixty-four convictions or guilty pleas.¹⁴² Several appellate courts have reviewed the technique's admissibility, and almost all have held it acceptable.¹⁴³

nated Hernandez, but failed to eliminate Cruz. The tests also failed to eliminate as the perpetrator a third man who was convicted of an unrelated, similar murder of another young girl. *Genetic Test Fails to Identify the Killer in Nicarico Abduction Case*, Chicago Tribune, Jan. 23, 1990, § 2, at 7, col. 1. The specific DNA test that was used is known as polymerase chain reaction (PCR), which is less exact than other methods but capable of producing usable DNA from old or degraded samples. *Id.* A more popular and far more precise method is known as restriction fragment length polymorphism analysis (RFLP). *Id.* See Hoeffel, *supra* note 135, at 471. [Editor's Note: Cruz again was convicted and sentenced to death. The second Hernandez trial was declared a mistrial because of a deadlocked jury.]

139. Hoeffel, *supra* note 135, at 466 (citing Marx, *DNA Fingerprinting Takes the Witness Stand*, 240 SCIENCE 1616 (1988) (quoting Mac MacLeod, State Attorney's Office, Palatka, Florida)).

140. Thirteen sexual attacks occurred around the University of Illinois campus between April and September 1988. *Man Held in Attacks Near U. of I. Campus*, Chicago Tribune, Jan. 22, 1989, at 2, zone C. Lipscomb was arrested in January, 1989 for the criminal sexual assault of a Champaign woman on August 26, 1988. *Id.* The police were aided by the results of DNA genetic testing (obtained by warrant in September 1988, just after the last of the series of rapes) on Lipscomb's blood, saliva, and hair. *Id.* The evidence was admitted over strenuous objection by the defendant. *Press Service Release*, U.P.I., Feb. 7, 1990 (LEXIS, Nexis library, Omni file). Lipscomb has since been charged with one other rape and remains a prime suspect in at least seven other campus assaults. *Id.*

141. *Rape Conviction in DNA Case*, Chicago Tribune, Feb. 17, 1990, § 1, at 1, col. 2. The DNA evidence was heavily relied upon because the victim did not see and could not identify her assailant. *Id.* Telephone interview with Thomas J. Difanis, Champaign County State's Attorney, March 29, 1990.

142. Barinaga, *DNA Fingerprinting: Pitfalls Come to Light*, 339 NATURE 89 (1989). Several jurisdictions have subsequently considered the technique's admissibility, and the list is growing rapidly. See, e.g., *DNA Prints Help Win Conviction in 2 Rapes*, L.A. Times, March 16, 1990, § B1, col. 3 (Los Angeles trial); *DNA Evidence Admissible in Rape Trial*, L.A. Times, Feb. 15, 1990, § B1, col. 6 (San Diego trial).

143. See *Martinez v. State*, 549 So. 2d 694, 695, 697 (Fla. Dist. Ct. App. 1989) (probability of another DNA "match" to be 1 in 234 billion is admissible); *Andrews v. State*, 533 So. 2d 841, 850-51 (Fla. Dist. Ct. App. 1988), *cert. denied*, 542 So. 2d 1332 (Fla. 1989) (DNA print identification tests admissible under relevancy standard); *Cobey*

The Virginia Supreme Court was the first state supreme court to consider DNA printing's admissibility.¹⁴⁴ Affirming the death penalty of Timothy Spencer, the court held that "[t]he record is replete with uncontradicted expert testimony that no 'dissent whatsoever [exists] in the scientific community' concerning the reliability of the DNA printing technique."¹⁴⁵ Unlike Illinois, however, Virginia does not follow the *Frye* rule.¹⁴⁶ In *State v. Schwartz*,¹⁴⁷ the Minnesota Supreme Court reaffirmed the applicability of *Frye*¹⁴⁸ and held that DNA typing had gained general acceptance in the scientific community.¹⁴⁹ The evidence was not admitted, however, because the laboratory did not comply with "appropriate standards and controls."¹⁵⁰

Contending that the technique lacks quality control and consistency, there are many who argue that, despite its warm reception

v. State, 80 Md. App. 31, 43, 559 A.2d 391, 398 (1989) (the trial judge did not err in finding that DNA "fingerprinting" generally was accepted in the scientific community based upon the record before it); *People v. Castro*, 545 N.Y.S.2d 985, 995 ("DNA forensic identification tests to determine exclusion are reliable and meet the *Frye* standard of admissibility"); *People v. Wesley*, 140 Misc. 2d 306, 332, 533 N.Y.S. 2d 643, 659 (Sup. Ct. Albany County 1988). In *Wesley*, the court stated, "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 in the particular fields thereof in which it belongs—to wit, molecular biology, population genetics and diverse other branches of genetics, chemistry, biology, and biochemistry." *Id.* Cf. *Simkunas v. Tardi*, 720 F. Supp. 687, 696 (N.D. Ill. 1989) (DNA testing, conducted by agreement of the parties, was discussed but was held irrelevant for purposes of summary judgment); *Yorke v. State*, 556 A.2d 230, 236 (Md. 1989) (trial court did not err in denying a new trial on the basis of newly discovered DNA evidence showing that the victim's vaginal wash did not match the defendant's DNA pattern).

144. *Spencer v. Commonwealth*, 385 S.E.2d 850 (Va. 1989); *Spencer v. Commonwealth*, 384 S.E.2d 775 (Va. 1989) [hereinafter "*Spencer I*"]; *Spencer v. Commonwealth*, 384 S.E.2d 785 (Va. 1989) [hereinafter "*Spencer II*"].

145. *Spencer II*, 384 S.E.2d at 797.

146. See *O'Dell v. Commonwealth*, 234 Va. 672, 695-96, 364 S.E.2d 491, 504 (1988). The *Spencer* court indicated, however, that even if it had followed the *Frye* rule, the evidence would have been admissible. *Spencer I*, 384 S.E.2d at 783 n.10; *Spencer II*, 384 S.E.2d at 797 n.11.

147. 447 N.W.2d 422 (Minn. 1989).

148. *Id.* at 424.

149. *Id.* at 428.

150. *Id.* See also *State v. Woodall*, 385 S.E.2d 253 (W. Va. 1989), in which the court stated

[a]s to DNA typing analysis, we find that the reliability of these tests is now generally accepted by geneticists, biochemists, and the like This does not, however, mean that DNA tests should always be admitted. Expert testimony may be received to impeach the particular procedures employed in a specific test or the reliability of results obtained.

Id. at 260.

by the courts, DNA testing is unreliable.¹⁵¹ These concerns are justified when one considers that crime laboratories suffer from an alarmingly high rate of error.¹⁵² The fear of unreliability stems from the highly technical nature of the test: unlike fingerprint or bite mark evidence, DNA typing is incapable of observation and requires the jury to rely upon the skill of the technician and to accept or reject the expert witnesses conclusion on faith.¹⁵³

Given the varied application of *Frye* in Illinois, DNA testing is likely to gain acceptance either because of its reliability or its general acceptance in the scientific community. Questions regarding the admissibility of DNA evidence, however, will provide Illinois courts an the opportunity to reevaluate their current, confusing approach to admitting scientific evidence.

V. ANALYSIS

A. Criticism of Frye

The foregoing background discussion demonstrates that *Frye* has been applied selectively in Illinois ever since its adoption.¹⁵⁴ Illinois courts differ widely in their interpretations. Some have determined that the *Frye* test applies to evidence involving only an intermediate mechanical stage. Other courts have different opinions regarding precisely what constitutes scientific evidence,¹⁵⁵ gen-

151. Despite numerous media representations of its virtual accuracy and undisputed reliability, DNA identification testing does have a growing number of critics. See Hoefel, *supra* note 135, at 466 (“[m]embers of the stunned defense bar have only recently come to life to launch a serious attack on the reliability of the evidence”) (citing R. McFadden, *New York Judge’s Ruling Challenges Reliability of DNA Tests*, N.Y. Times, Aug. 15, 1989, at A16, col. 1). See also *DNA Identity Tests Called Unreliable*, Chicago Tribune, Jan. 29, 1990, § 1, at 4, col. 1.

152. See Bretz, *supra* note 34, at 511 (only 30% of the labs participating in the project were able correctly to exclude two individuals who were not associated with the sample and identify the one individual who was); Imwinkelried, *supra* note 2, at 555 (FDA officials charging that as many as 10% of the clinical researchers in the United States do “something less than [honest research]”) (citing W. BROAD & N. WADE, *BETRAYERS OF THE TRUTH* 83 (1983); Bechtel, *Medical Tests: Don’t Bet Your Life on Them*, PREVENTION, Jan. 1983, at 55 (1983) (estimating 4 million erroneous test results daily); Imwinkelried, *Will High-Tech Sleuthing Hold Up in Court?: Judges and Juries Should Be Skeptical of Forensic Scientists’ Claims*, NEWSDAY, March 17, 1988, at 89 (noting Census For Disease Control study in 1985 that showed some laboratories erred more than 60% of the time in determining the presence of illegal drugs).

153. See generally Annotation, *Admissibility, In Prosecution for Sex-Related Offense, of Results of Tests on Semen or Seminal Fluids*, 75 A.L.R. 4th 897, 949 (1990).

154. See *supra* notes 80-134 and accompanying text. See *supra* notes 73-80 and accompanying text (the initial adoption of *Frye* in *Baynes* was not explicit).

155. Varying definitions of “scientific evidence” lead to a selective application of *Frye* because a determination that the evidence is not “scientific” means that *Frye* is inapplicable.

eral acceptance, and the relevant scientific community.

First, the Illinois courts' inconsistent approach is particularly evident in the cases applying *Frye* to procedures involving an intermediate mechanical stage, *i.e.*, interpretation of data obtained from mechanical equipment. Appellate courts have not consistently recognized the distinction between a visual comparison and an intermediate mechanical stage. Given this inconsistent application and because the theory lacks Illinois Supreme Court approval, its viability is suspect. Moreover, the notion of an intermediate mechanical stage is vague and subjective.

For example, under the "pink tooth theory," strangulation could be one of several causes of death if a decedent has pink teeth.¹⁵⁶ It would seem that photographs that indicate a pinkish tinge to a decedent's teeth involve merely a visual comparison. The Illinois Supreme Court, however, has ruled that expert testimony regarding the "pink tooth theory" must be based upon scientific theories that have gained general acceptance in the expert's field.¹⁵⁷ Thus, the court implies that the pink tooth theory does not rely merely on a visual comparison but involves an intermediate mechanical stage.

A similar problem arises when a court considers evidence obtained from the "superglue" (cyanoacrylate) technique that subjects latent fingerprints to superglue fumes in order to enhance the print.¹⁵⁸ In addition to the difficulty in determining whether this procedure involves an intermediate mechanical stage,¹⁵⁹ considera-

156. *People v. Jordan*, 103 Ill. 2d 192, 197-98, 469 N.E.2d 569, 572 (1984).

157. *Id.* at 208-09, 469 N.E.2d at 576-77.

158. *People v. Eyler*, 133 Ill. 2d 173, 549 N.E.2d 268 (1989). The *Eyler* court did not discuss the line of cases holding *Frye* inapplicable to scientific evidence not involving an intermediate mechanical stage: "We reject the State's argument, unsupported by any citations to authority, that the *Frye* test does not apply to this particular technique." *Id.* at 211, 549 N.E.2d at 285. This statement could be viewed as an outright rejection of the intermediate mechanical stage distinction. Whether it will be interpreted as such remains to be seen.

159. Determining whether the evidence involves an intermediate mechanical stage also proves troublesome in situations not yet addressed by Illinois courts. For example, the question has arisen whether computer animation involves an intermediate mechanical step or is merely another form of displaying evidence to the jury. While some may argue that animation is only as good as the factual information put into it, others point out that an object can appear to change speed or direction by altering the point from where it is viewed. Thus, the evidence may be technically correct but still may be misleading: the medium shapes the message. Marcotte, *Animated Evidence: Delta 191 Crash Re-Created Through Computer Simulations at Trial*, 75 A.B.A.J. 52, 55-56 (December 1989). *Cf. French v. City of Springfield*, 65 Ill. 2d 74, 357 N.E.2d 438 (1976) (admission of a film that recreated the plaintiff's version of an auto accident was held to be error because it tended to precondition the jury to accept plaintiff's version of the facts).

tion of this technique detracts the court from its primary concern: determining whether the technique is sufficiently reliable and accepted to admit its results into evidence.

Another problem with the intermediate mechanical stage distinction is that it can negate *Frye*'s original purpose. Scientific evidence that involves only a visual analysis can be as prejudicial as evidence involving an intermediate mechanical stage because it may convey a similar "aura of infallibility."¹⁶⁰ Perhaps it is for this reason that the Illinois Supreme Court applied *Frye* to hypnotically induced testimony¹⁶¹ even though the process does not involve an intermediate mechanical step. Similarly, the fourth district has applied *Frye* to blood spatter analysis although the technique involves visual analysis only.¹⁶² Thus, the intermediate mechanical stage distinction has led to the *Frye* standard's selective application.¹⁶³

Second, differing opinions regarding the precise definition of "scientific evidence" have also led to a selective application of the *Frye* standard. A concise definition of scientific evidence is conspicuously absent from both case law and academic journals.¹⁶⁴ In Illinois, no bright line separates scientific evidence from other forms of opinion testimony. Rather, it appears that almost all forensic evidence is deemed to be scientific evidence, as well as any evidence involving an analysis or process that must be supplanted by scientific expert testimony.¹⁶⁵ An analysis of one's shoe-wear pattern¹⁶⁶ or handprint¹⁶⁷ is considered scientific evidence because an expert is needed to analyze detailed measurements. A scoring technique to determine a defendant's dangerousness to the community, however, was not deemed to be scientific evidence because the rating system was nothing more than an express statement of the

160. See *supra* note 13 (discussion of ways in which scientific evidence may mislead a jury).

161. See *People v. Zayas*, 131 Ill. 2d 284, 293-95, 546 N.E.2d 513, 518 (1989); see also *supra* notes 81-92 and accompanying text (discussion of hypnotically induced testimony).

162. *People v. Owens*, 155 Ill. App. 3d 990, 508 N.E.2d 1088 (4th Dist. 1987); see *supra* notes 104-13 and accompanying text (blood spatter technique discussed). See also *supra* note 158 (rejected intermediate mechanical stage distinction in "superglue" case).

163. See also *People v. Ferguson*, 172 Ill. App. 3d 1, 526 N.E.2d 525 (2d Dist. 1988) (shoe-wear pattern). The court ultimately used both the *Frye* test and the "less stringent" standard used for evidence involving only visual comparison. *Id.* at 9-11, 526 N.E.2d at 531-32.

164. See also *supra* note 11 (discussion of what constitutes scientific evidence).

165. Cf. Imwinkelried, *supra* note 2, at 554 (citing Clark, *Scientific Evidence, in THE PROSECUTOR'S DESKBOOK* 542 (P. Healy & J. Manak eds. 1969)) (scientific evidence is "the backbone of every circumstantial evidence case").

166. *Ferguson*, 172 Ill. App. 3d at 5-6, 526 N.E.2d at 528-29.

167. *People v. Columbo*, 118 Ill. App. 3d 882, 455 N.E.2d 733 (1st Dist. 1983).

weight the expert gave each factor in its contribution to defendant's dangerousness.¹⁶⁸

Prior to 1989, Illinois appellate courts had held that hypnotically induced testimony was not subject to the *Frye* analysis because it involved eyewitness testimony rather than scientific evidence.¹⁶⁹ Such testimony was therefore admissible. Although *People v. Zayas*¹⁷⁰ rejected this reasoning, the treatment of hypnotically induced evidence presents yet another illustration of the way in which differing definitions of scientific evidence can lead to inconsistent application of the *Frye* test and disparate decisions on the admissibility of certain scientific evidence. Today, Illinois no longer admits hypnotically induced recall because the technique has not been generally accepted as scientifically accurate.¹⁷¹

Problems also arise because courts are unclear as to the standard they should use when they decide *not* to apply *Frye*. Some courts use their own judgment of reliability based on the particular facts before them. For example, the *People v. Sandy*¹⁷² court took refuge in the methods the doctor used to reach his conclusion because they were "methods accepted by everyone."¹⁷³ In other words, the court accepted the conclusions because the methodology, rather than the novel theory involved, was acceptable.¹⁷⁴

Most Illinois courts that decline to apply *Frye*, or that apply *Frye* in their own way,¹⁷⁵ use some form of a general reliability standard. Under this approach, scientific evidence generally need not be accepted if its reliability can otherwise be established. In *People v. Hendricks*,¹⁷⁶ for example, the court allowed testimony

168. *People v. Israel*, 181 Ill. App. 3d 851, 537 N.E.2d 1124 (2d Dist. 1989). *Cf.* Annotation, *Admissibility of Results of Computer Analysis of Defendant's Mental State*, 37 A.L.R. 4th 510, 512-13 (1985) (the general acceptance and reliability of computerized data regarding a defendant's mental condition is a critical issue).

169. *See People v. Gibson*, 117 Ill. App. 3d 270, 452 N.E.2d 1368 (4th Dist. 1983); *People v. Cohoon*, 120 Ill. App. 3d 62, 457 N.E.2d 998 (5th Dist. 1982); *supra* notes 81-92 and accompanying text (admissibility of hypnotically induced testimony discussed).

170. 131 Ill. 2d 284, 546 N.E.2d 513 (1989) (hypnotically induced testimony inadmissible under *Frye* analysis).

171. *See supra* notes 81-92 and accompanying text (*Gibson* and *Zayas* discussed).

172. *People v. Sandy*, 188 Ill. App. 3d 833, 544 N.E.2d 1248 (4th Dist. 1989).

173. *Id.* at 847, 544 N.E.2d at 1256. It is unclear whether the *Sandy* court was applying *Frye*, a variation of *Frye*, or its own standard in light of the facts before it. *See supra* note 129 and accompanying text (discussion of the standard *Sandy* applied).

174. 188 Ill. App. 3d at 846-47, 544 N.E.2d at 1256.

175. *See infra* notes 185-203 and accompanying text (discussion of the varying ways courts have interpreted general acceptance and relevant scientific field).

176. 145 Ill. App. 3d 71, 495 N.E.2d 85 (4th Dist. 1986). The defendant was found guilty of murdering of his wife and three children. He was sentenced to four consecutive terms of natural life imprisonment. *Id.* at 79, 495 N.E.2d at 91.

that offered an estimated time of death based upon an analysis of the victim's stomach contents.¹⁷⁷ The court held the evidence sufficiently reliable despite a potential lack of general scientific acceptance.¹⁷⁸

Courts that believe *Frye* applies only to evidence involving an intermediate mechanical stage have used a general reliability standard. For example, the court in *People v. Columbo*¹⁷⁹ concluded that *Frye* did not apply to hand print analysis because it involved only visual comparison.¹⁸⁰ Citing *People v. Jennings*,¹⁸¹ the court explained in dicta that Illinois historically adhered to a "more liberal" reliability test, rather than the general acceptance standard set forth under *Frye*.¹⁸² The court went further by concluding that

177. *Id.* at 99, 495 N.E.2d at 105. See also *People v. Milone*, 43 Ill. App. 3d 385, 387, 356 N.E.2d 1350, 1352 (2d Dist. 1976) (contents of stomach used to determine time of death was used in trial court but its admissibility was not contested on appeal).

178. *Hendricks*, 145 Ill. App. 3d at 99, 495 N.E.2d at 104. The experts disagreed with each other on several grounds and at least one testified that a dispute existed in the scientific community over the use of gastric analysis to determine time of death. *Id.* at 90-91, 99, 495 N.E.2d at 99-100, 104. The evidence was admitted, however, to provide an estimated range of time of death instead of an exact time of death. *Id.* at 99, 495 N.E.2d at 104. In admitting the evidence, the court stated that, "general scientific acceptance is not a prerequisite if the evidence is otherwise shown to be reliable A dispute in the scientific community about the reliability of a method goes to the weight of the evidence." *Id.* at 98, 495 N.E.2d at 104.

179. 118 Ill. App. 3d 882, 455 N.E.2d 733 (1st Dist. 1983).

180. *Id.* at 960, 455 N.E.2d at 789.

181. *People v. Jennings*, 252 Ill. 534, 96 N.E. 1077 (1911). Those cases using a reliability standard usually cite *Jennings* as support. See, e.g., *People v. Milone*, 43 Ill. App. 3d 385, 356 N.E.2d 1350 (2d Dist. 1976) (bite mark analysis). The *Milone* court discussed *Frye* and *Jennings* but distinguished them on the grounds that those cases involved an intermediate mechanical stage. 43 Ill. App. 3d at 396, 356 N.E.2d at 1358. Stating that bite mark evidence was analogous to footprint, fingerprint, and hair comparisons, the court concluded that the bite mark evidence served only to "lend assistance to the trial court in interpreting physical evidence not within the ken of the average trial judge's knowledge" and was therefore admissible. *Id.* The *Milone* court's analysis of *Jennings*, however, was inaccurate. In *Jennings*, the court admitted fingerprints into evidence based upon their reliability and "common use." See *supra* notes 65-66 and accompanying text. The court conducted a thorough investigation of the fingerprinting technique and the theory upon which it was based. *Jennings*, 252 Ill. at 546-49, 96 N.E. at 1081-83. If bite marks are analogous to fingerprints, as the *Milone* court asserted, then the court should have followed *Jennings*. The *Milone* court, however, did consider that other jurisdictions had reviewed the technique, and it mentioned scientific journals that discussed the subject. *Milone*, 43 Ill. App. 3d at 397-98, 356 N.E.2d at 1359-60 (citing *People v. Johnson*, 8 Ill. App. 3d 457, 289 N.E.2d 722 (3d Dist. 1972)).

182. *Columbo*, 118 Ill. App. 3d at 959, 455 N.E.2d at 789. *Columbo* described *Jennings* inaccurately. The court in *People v. Ferguson*, 172 Ill. App. 3d 1, 526 N.E.2d 525 (2d Dist. 1988) (shoe-wear pattern analysis), correctly recognized that the *Jennings* decision considers, like *Frye*, general acceptance as well as reliability. *Ferguson*, 172 Ill. App. 3d at 10, 11, 526 N.E.2d at 532. *Jennings* recognized the evidence's admissibility only after concluding "that experience has shown it to be reliable" and that it was "in such

evidence for which there is no intermediate mechanical stage is admissible once a competent expert testifies that the scientific process in question is reliable.¹⁸³ Evidence of disagreement among the experts would bear upon the weight, not the admissibility, of the evidence.¹⁸⁴ *Columbo* marks a significant departure from both the *Frye* test and the substantially similar *Jennings* standard because the opinion of one expert is sufficient to admit a novel scientific technique. Use of this standard fails to prevent the jury from over-emphasizing scientific data that may in fact be unreliable and inaccurate. *Columbo* thus undermines the important policy supporting the *Frye* decision.

In addition to the confusion surrounding the issue of *when Frye* applies, judicial determinations of *what* is required in order for the general acceptance standard to be met are perhaps even more confusing.¹⁸⁵ Depending upon the court and the nature of the evidence under review, Illinois courts have used different variations of the *Frye* test. The fundamental explanation for this inconsistency lies with the common error of treating the general acceptance requirement as synonymous with a reliability standard.

The cases involving the admissibility of hypnotically induced testimony usually have applied the general acceptance standard the *Frye* court contemplated.¹⁸⁶ In *People v. Zayas*,¹⁸⁷ the Illinois Supreme Court disallowed evidence because of disagreement in the scientific community over its accuracy.¹⁸⁸ The court did not substantially inquire into the methodology or the theory of the tech-

general and common use that the courts [could not] refuse to take judicial cognizance of it." *Jennings*, 252 Ill. at 546-47, 549, 96 N.E. at 1081, 1082. See *supra* notes 65-66 and accompanying text.

183. *Columbo*, 118 Ill. App. 3d at 960, 455 N.E.2d at 790.

184. *Id.* See also *supra* note 178 and accompanying text (discussion of expert testimony); *infra* notes 191-93 and accompanying text (differing expert opinion goes to the weight, rather than the admissibility of the evidence).

185. See generally *supra* notes 56-63 and accompanying text (general acceptance standard discussed).

186. The *Frye* court required general acceptance by the relevant scientific community as a means of ensuring reliability. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), generally discussed *supra* notes 15-45 and accompanying text.

187. 131 Ill. 2d 284, 546 N.E.2d 513 (1989).

188. *Id.* at 294-95, 546 N.E.2d at 518. See also *People v. Bradney*, 170 Ill. App. 3d 839, 861, 525 N.E.2d 112, 126 (4th Dist. 1988) (electrophoretic analysis of dried blood-stains generally accepted in the scientific community); *People v. Partee*, 157 Ill. App. 231, 511 N.E.2d 1165 (1st Dist. 1987) (electrophoretic analysis generally accepted by forensic scientists as a reliable method of detecting genetic markers in blood); *People v. Harbold*, 124 Ill. App. 3d 363, 464 N.E.2d 734 (1st Dist. 1984) (unanswered questions concerning the scientific acceptance of the technique).

nique. It correctly¹⁸⁹ noted only a lack of general acceptance among those who were qualified to review it.¹⁹⁰

Other courts have adopted a definition of "general acceptance" that focuses more upon the general reliability of the evidence rather than its acceptance among members of the relevant scientific community. In *People v. Johnson*,¹⁹¹ for example, the court admitted the results of a neutron activation analysis because a majority of other jurisdictions had accepted the test as a reliable technique.¹⁹² The court stated that any lack of certainty would go to the weight and not the admissibility of the evidence.¹⁹³ Thus, *Johnson* departs from *Frye* and substitutes for the general acceptance requirement a less stringent variation. Similarly, in *People v. Cole*,¹⁹⁴ the court admitted atomic absorption analysis because of its general reliability, not because of its general acceptance.¹⁹⁵

Third, several variations of *Frye* have developed as a result of difficulty in determining the "relevant scientific community."¹⁹⁶ The court in *People v. Harbold*¹⁹⁷ stated that the widespread, national use of genetic marker evidence (electrophoresis) in crime labs could not justify its admission "in the face of a *bona fide* scientific dispute."¹⁹⁸ Thus, for the *Harbold* court, the relevant scientific community extended beyond the state scientists working in crime labs.¹⁹⁹ Yet, in *People v. Eycler*,²⁰⁰ the court allowed evidence resulting from a "superglue" fingerprint technique²⁰¹ because for several years it was routinely used by the Chicago Police Department and was considered reliable by those working in the field of

189. Proponents of *Frye* have consistently argued that the general acceptance standard relieves judges from having to make scientific determinations. *United States v. Addison*, 498 F.2d 741, 743-44 (D.C. Cir. 1974). According to *Addison*, a correct application of *Frye* does not involve a judicial analysis of the methodology or theory behind the technique: "[t]he requirement of general acceptance in the scientific community assures that those most qualified to assess the general validity of a scientific method will have the determinative voice." *Id.*

190. *Zayas*, 131 Ill. 2d at 294-95, 546 N.E.2d at 518-19.

191. 114 Ill. 2d 170, 499 N.E.2d 1355 (1986)

192. *Id.* at 197, 499 N.E.2d at 1367.

193. *Id.*

194. 170 Ill. App. 3d 912, 524 N.E.2d 926 (1st Dist. 1988).

195. *Id.* at 927, 524 N.E.2d at 935.

196. *See supra* notes 47-55 and accompanying text (scientific field discussed).

197. 124 Ill. App. 3d 363, 464 N.E.2d 734 (5th Dist. 1988).

198. *Id.* at 379, 464 N.E.2d at 747.

199. *Id.*

200. 133 Ill. 2d 173, 549 N.E.2d 268 (1989).

201. *Id.* at 208-09, 549 N.E.2d at 284. *See also supra* note 158 and accompanying text ("superglue" technique explained).

fingerprint examination and comparison, including the FBI.²⁰² The relevant scientific field in *Eyler* was therefore much more narrow than the field defined in *Harbold*. The broader the definition of the relevant scientific field, the more difficult it becomes to establish general acceptance within that field and, consequently, to admit evidence under *Frye*. Thus the different constructions of the scientific field lead to different constructions and applications of the *Frye* rule.²⁰³

There are many benefits to the *Frye* standard.²⁰⁴ Since its adoption in Illinois, however, the courts have had difficulty determining when to apply the standard and, when it is applied, applying it in a uniform fashion. This difficulty has resulted in judicial confusion and has denied both plaintiffs and defendants the ability to accurately pinpoint the legal standard this state uses to determine the admissibility of scientific evidence.

B. An Alternative to *Frye*

Before reviewing an alternative to *Frye*, it must be mentioned that Illinois has joined other states by beginning to adopt the Federal Rules of Evidence ("FRE").²⁰⁵ Federal Rules 703²⁰⁶ and 705²⁰⁷ have already been adopted in Illinois.²⁰⁸ Moreover, Illinois courts have begun to accept the definition of relevant evidence

202. *Eyler*, 133 Ill. 2d at 212, 549 N.E.2d at 285. Although the superglue technique probably is generally accepted as reliable in a broader relevant scientific field, the practice of using such a limited field to determine general acceptance could be problematic. See *infra* note 203 and accompanying text.

203. See generally *Reed v. State*, 283 Md. 374, 399, 391 A.2d 364, 377 (1978). In *Reed*, the court discounted the notion that scientists in the field of speech and hearing should be eliminated from the relevant field of experts and that only those who have performed voiceprint experiments should be admitted. ("The purpose of the *Frye* test is defeated by an approach which allows a court to ignore the informed opinions of a substantial segment of the scientific community which stands in opposition to the process in question.")

204. See *supra* notes 34-49 and accompanying text (discussion of the *Frye* benefits).

205. M. Kadish & R. Kling, Illinois Judicial Conference, Associate Judge Seminar 309 (March 1989).

206. FED. R. EVID. 703 provides:

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

207. FED. R. EVID. 705 provides: "The expert may testify in terms of opinion or inference and give reasons therefore without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination."

208. *Wilson v. Clark*, 84 Ill. 2d 186, 417 N.E.2d 1322 (1981).

under FRE 401 and the balancing test of FRE 403.²⁰⁹ Other federal rules that could have an impact on the continued viability of *Frye* include Rules 401²¹⁰ 402,²¹¹ 702,²¹² and 703.²¹³ Illinois' adoption of the Federal Rules of Evidence could lead to the *Frye* standard falling into disuse.²¹⁴ The federal rules curiously are silent as to whether they encompass the general acceptance standard enunciated in *Frye*.²¹⁵ Moreover, the rules manifest a "spirit of liberal admissibility" that threatens the inherently conservative nature of the *Frye* test.²¹⁶ All but two federal circuits, however, still purport to apply the *Frye* standard.²¹⁷ Additionally, the continued application of the *Frye* rule is not inherently inconsistent with the adoption of the Federal Rules of Evidence because they were never intended to be a comprehensive codification of evidentiary rules. Many common law rules such as *Frye* that are either not addressed or treated only in a general fashion under the federal rules have

209. M. Kadish & R. Kling, *Illinois Judicial Conference, Associate Judge Seminar* 309 (March 1989).

210. See *supra* note 9 and accompanying text (discussion of FED. R. EVID. 401).

211. FED. R. EVID. 402 provides: "All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible."

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

213. See *supra* note 206 (text of FED. R. EVID. 703).

214. See generally Note, *Expert Testimony Based on Novel Scientific Techniques: Admissibility Under the Federal Rules of Evidence*, 48 GEO. WASH. L. REV. 774 (1980).

215. Giannelli, *supra* note 11, at 1229, states that "[t]he [*Frye* test] is simply ignored in the Advisory Committee's Notes, congressional committee reports, floor debates, and hearings. Some courts and commentators assume that *Frye* remains the applicable standard, while others reject this view." [footnotes omitted] *Id.* See 3 J. WEINSTEIN & M. BERGER, *WEINSTEIN'S EVIDENCE* ¶ 702, at 716 ("[T]he silence of the rule [702] and its drafters should be regarded as tantamount to an abandonment of the general acceptance standard."); SALTZBURG & REDDEN, *FEDERAL RULES OF EVIDENCE MANUAL* 452 (3d ed. 1982) ("[i]t would be odd if the Advisory Committee and the Congress intended to overrule the vast majority of cases excluding such evidence as lie detectors without explicitly stating so.") See generally *United States v. Downing*, 753 F.2d 1224, 1234-35 (1985) (concluding that the Federal Rules of Evidence neither incorporate nor repudiate the *Frye* standard).

216. See *Downing*, 753 F.2d at 1237 ("[I]n its pristine form the general acceptance standard reflects a conservative approach to the admissibility of scientific evidence that is at odds with the spirit, if not the precise language, of the Federal Rules of Evidence.")

217. Bretz, *supra* note 34, at 507 n.5. The eighth and second circuits do not apply *Frye*. States not applying *Frye* are Florida, Georgia, Iowa, Kentucky, Louisiana, Maine, Montana, New Mexico, New York, Ohio, Oregon, Utah, and Wyoming. *Id.*

remained viable.²¹⁸

Notwithstanding the potential impact of the Federal Rules of Evidence on the future of *Frye*, commentators have recommended numerous alternatives to the standard,²¹⁹ including that the degree of required acceptance be modified,²²⁰ that an independent tribunal such as a "science court" should review novel scientific techniques prior to any courtroom introduction,²²¹ and that the standard should be abandoned.²²² Finally, a return to the traditional relevancy standard has been suggested. In criminal cases the proponent of the scientific evidence would have to establish its reliability beyond a reasonable doubt before it could be admitted.²²³

Modifying the degree of required acceptance does not solve the problems of inconsistent application and interpretation. Certainly, a requirement more conservative than general acceptance would add to the controversy surrounding *Frye*. One of the reasons why *Frye* has become subject to so much modification is that courts have been unwilling to apply a strict requirement to evidence that they feel is otherwise reliable.²²⁴ Fashioning a stricter requirement will only invite further manipulation of the test and result in more confusion. Making the degree of required acceptance less strict, such as by requiring substantial instead of general scientific acceptance,²²⁵ does not substitute a standard that is any less amorphous or difficult to define as general acceptance.

The idea of creating an expert tribunal to evaluate and pass judgment on the validity and reliability of new scientific developments would require such a radical departure from normal trial proce-

218. Giannelli, *supra* note 11, at 1229. Impeachment by evidence of bias, for example, is not mentioned in the Rules. *Id.* at 1229 n.251.

219. McCormick, *supra* note 20, at 905. In addition to the alternatives listed in the text see Black, *supra* note 45, at 595; Elliot, *Toward Incentive-Based Procedure: Three Approaches For Regulating Scientific Evidence*, 69 B.U.L. REV. 487 (1989); Moenssens, *supra* note 1, at 545.

220. See *infra* notes 224-25 and accompanying text.

221. Martin, *The Proposed "Science Court"*, 75 MICH. L. REV. 1058 (1977). See also Giannelli, *supra* note 11, at 1231-32, 1232 n.269.

222. McCormick, *supra* note 20, at 879.

223. Giannelli, *supra* note 11, at 1245-50.

224. See *United States v. Downing*, 753 F.2d 1224, 1236 (3d Cir. 1985) (under *Frye*, "courts may be required to exclude much probative and reliable information from the jury's consideration, thereby impeding the truth-seeking function of litigation.") See also *supra* notes 31-33 and accompanying text (ways in which *Frye* impedes the truth-seeking process).

225. J. RICHARDSON, MODERN SCIENTIFIC EVIDENCE § 2.5, at 24 (2d ed. 1974). See *United States v. Baller*, 519 F.2d 463 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975).

dures that it is not likely to gain much support.²²⁶ Moreover, the question would ultimately become whether the expert tribunal would be required to apply *Frye*.²²⁷

Some cases²²⁸ and commentators have suggested abandoning *Frye* altogether and adhering to the traditional relevancy standard.²²⁹ Thus, the admissibility of a novel scientific technique would depend upon its probative value as balanced against any dangers of confusion, unfair prejudice, or misleading of the jury.²³⁰ The simplicity of this approach makes it appealing because it incorporates concepts that are understood and routinely used by both judges and attorneys.²³¹ The court would handle scientific evidence as it would any other evidence, that is, by balancing factors within the framework of general relevancy and expert testimony rules.²³²

The relevancy approach has been criticized, however, for failing to protect against the admission of unreliable scientific evidence adequately.²³³ One problem is that a court's assessment of the probative worth of a novel scientific technique and its potential for misleading the jury will often result in reliance on the opinion of one or two experts.²³⁴ Also, the relevancy approach assumes that the factfinder is capable of evaluating novel scientific evidence.²³⁵

226. See Giannelli, *supra* note 11, at 1231-32; Maletskos & Spielman, *supra* note 32, at 962.

227. McCormick, *supra* note 20, at 908. Admittedly, the tribunal could become an excellent forum for taking a survey of scientific opinion. *Id.* Despite this convenience, critics maintain that a special tribunal might prove to be both time consuming and inconclusive. Bazelon, *Coping With Technology Through The Legal Process*, 62 CORNELL L. REV. 817, 826-828 (1977).

228. See, e.g., United States v. Downing, 753 F.2d 1224 (1985).

229. Also known as the "McCormick" view. Giannelli, *supra* note 11, at 1203.

230. The standard in FED. R. EVID. 403, discussed *supra* note 9. See also Giannelli, *supra* note 11, at 1235 ("the admissibility of a novel scientific technique would depend on a three-step process: first, the probative value of the evidence would be determined; second, dangers such as the potential of the evidence to mislead the jury would be identified; and third, the probative value would be balanced against the identified dangers.")

231. McCormick, *supra* note 20, at 916. McCormick states that "[i]n sum, all values that have been advanced in support of retaining the *Frye* standard can be furthered without it. The evolutionary erosion and abrogation of the standard have produced a synthesis that has given greater precision and concreteness to those values. The only significant loss has been its rigidity and artificiality." *Id.* at 911.

232. *Id.* at 908-09.

233. Giannelli, *supra* note 11, at 1239.

234. *Id.* See *supra* notes 54-55 and accompanying text (discussion of the danger inherent in limiting the number of experts who testify).

235. Because most techniques will pass the threshold requirements of admissibility, the deficiencies of the technique will get exposed before the jury. Giannelli, *supra* note 11, at 1239.

Especially in complex cases, a jury may not be able to do so.²³⁶

One commentator has argued that the relevancy approach may be acceptable for civil cases, but not for criminal trials;²³⁷ he further suggests that novel scientific evidence requires a special burden of proof. He argues that requiring proof of reliability of a scientific technique beyond a reasonable doubt would allay any fears of finding a criminal defendant guilty based on evidence of dubious reliability.²³⁸ This proposition imposes an enhanced burden on the admissibility of novel scientific evidence in criminal cases and rejects the ambiguous general acceptance standard espoused by *Frye*. Consequently, many of the problems associated with the application of *Frye* would be avoided.

Critics of this approach argue that it is unnecessary.²³⁹ Although the concern for reliability is admirable, most courts rejecting *Frye* have determined that the balancing process is sufficient to preclude the admission of unreliable scientific evidence.²⁴⁰ As a practical matter, it is much more convenient for a court to apply the tried and true balancing process of the Federal Rules of Evidence than to use an entirely new standard without precedent. Barring any legislative action, it thus is unlikely that this approach will be adopted.

Concerns over the admission of unreliable evidence would be eliminated if a court applies, not just a simple balancing test, but one that considers in some detail factors weighing probativeness

236. Giannelli, *supra* note 11, at 1240. It is not that jurors are unintelligent, but choosing among conflicting experts can be difficult. As one witness stated, "The expert witnesses did a good job of bringing things right down to our level. . . . The only problem was that they didn't agree with each other. It was pretty confusing." *Science in the Court*, 101 U.S. NEWS AND WORLD REP. 91 (Nov. 10, 1986).

237. Giannelli, *supra* note 11, at 1246. Professor Giannelli takes the position that a special burden should be placed on the admissibility of novel scientific evidence:

[t]he introduction of unreliable evidence that has a significant potential to influence a jury greatly increases the likelihood of an erroneous verdict. In effect, the relevancy approach places the burden on the party opposing admissibility—typically the defendant in a criminal case. Instead of the prosecution carrying a substantial burden of establishing the reliability of a novel scientific technique, the defendant must shoulder the burden of establishing unreliability.

Id. (footnotes omitted).

238. *Id.* at 1247-48. For a critique of Professor Giannelli's proposal see McCormick, *supra* note 20, at 908.

239. McCormick, *supra* note 20, at 908 ("the purpose of the [beyond a reasonable doubt] requirement would be to emphasize the caution necessary in admitting novel scientific evidence. An appellate court can accomplish the same purpose more directly by prescribing and practicing such caution. The criminal case context is sufficient basis for doing so. Adopting a special burden of proof rule may obscure the real issues and add a requirement that is more symbolic than substantial.")

240. See *United States v. Downing*, 753 F.2d 1224, 1237 (1985).

against prejudice.²⁴¹ One commentator's exhaustive list of recommended factors would be ideal for such an extended balancing test. This type of balancing would ensure that the reliability of a technique is deliberated thoroughly and that the admissibility decision is thoughtfully considered.²⁴² Most importantly, the integrity of the judicial process is preserved. The relevancy approach to admitting scientific evidence, coupled with a mandatory balancing of the "special" factors, is a simple, effective, and workable alternative to the *Frye* test if the required range of factors is broad enough to permit the court to make an informed decision about the admissibility of novel, even controversial scientific data and techniques.

Moreover, many of the problems associated with *Frye* and highlighted by this Article would be eliminated. The areas of concern that have proven most difficult for the courts to analyze—defining scientific evidence, general acceptance, and relevant scientific community—would assume less significance because they would be part of a multi-factor balancing scheme.

By requiring a court to follow a detailed balancing scheme based on specific factors, the court will be forced to analyze the verifiability of the techniques used and the general accuracy of the scientific method employed. The most significant "safety" feature of the balancing test advocated here is that the evidence will always be excluded if it would prejudice the defendant or confuse the issues, a feature noticeably absent from the *Frye* test.

Illinois courts would benefit from the adoption of a relevancy approach to scientific evidence because it furnishes a consistent, unified framework for admissibility. The method also provides flexibility and, coupled with a requirement that the "special" factors be addressed, encourages a weighing of every pertinent consideration that has an impact on the reliability of a scientific technique in a particular case.²⁴³

241. See generally McCormick, *supra* note 20, at 911-12. McCormick suggests using the following eleven factors: (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].

242. *Id.* at 915. For a discussion of these factors, see Note, *supra* note 19, at 371-76.

243. One commentator suggests that:

VI. CONCLUSION

With the growing use of scientific evidence at trial, it has become increasingly apparent that Illinois needs to develop a more consistent and definitive standard of admissibility for scientific evidence. The current *Frye* approach has failed to provide a uniform standard upon which both judges and attorneys can rely with confidence. The relevancy approach is consistent with the Federal Rules of Evidence and provides a simple and effective solution to the problem. If courts take into account an array of factors when determining probativeness, then the concerns of those who fear admission of unreliable evidence will be alleviated. Consequently, Illinois should consider adopting such an approach.

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[t]he advantage of an analysis weighing factors going to probativeness and prejudice is that it enables the court to focus *directly* on the different concerns that may be present in a particular case. The proponents of the *Frye* test voiced a number of these legitimate concerns, but a majority-rule standard may be an oversimplified and sometimes inadequate method of dealing with them.

Note, *supra* note 19, at 376.