University of Baltimore Law Review

Volume 9
Issue 1 *Fall 1979*

Article 10

1979

Casenotes: Evidence — Scientific Evidence — Spectrographic Voice Identification Held Inadmissible Pending the General Acceptance of the Technique by the Scientific Community. Reed v. State, 283 Md. 374, 391 A.2d 364 (1978)

Daniel R. Anderson
University of Baltimore School of Law

EVIDENCE — SCIENTIFIC EVIDENCE — SPECTROGRAPHIC VOICE IDENTIFICATION HELD INADMISSIBLE PENDING THE GENERAL ACCEPTANCE OF THE TECHNIQUE BY THE SCIENTIFIC COMMUNITY. *REED v. STATE,* 283 Md. 374, 391 A.2d 364 (1978).

In *Reed v. State,*[1] the Court of Appeals of Maryland held that spectrographic voice identification[2] has not achieved general acceptance among the members of the relevant scientific community and is, therefore, inadmissible in a criminal trial.[3] In so holding, the court of appeals declined to join the growing number of jurisdictions, albeit still the minority, that have admitted evidence of spectrographic analysis.[4] The court adopted the standard enunciated in *Frye v. United States,*[5] which requires that a scientific principle or technique "be sufficiently established to have gained general acceptance in the particular field in which it belongs"[6] before it is deemed to have crossed "the line between experimental and demonstrable stages," thereby allowing it to be admitted into evidence.[7] With this holding, *Reed* became the first Maryland case to adopt the *Frye* standard for determination of the admissibility of scientific evidence.[8] This

---

1. 283 Md. 374, 391 A.2d 364 (1978).
2. The common name for this identification procedure is "voiceprint." Courts, however, have expressed disapproval of that name because it raises the specter of a fingerprint, thereby connoting an "absolute certainty and accuracy which is neither justified by the facts nor claimed by the experts in the field." United States v. Baller, 519 F.2d 463, 465 n.1 (4th Cir.), *cert. denied,* 423 U.S. 1019 (1975). *See generally* Bolt, Cooper, David, Denes, Stevens & Pickett, *Speaker Identification by Speech Spectrograms: A Scientists' View of its Reliability for Legal Purposes,* 47 J. ACOUSTICAL SOC'Y AM. 597 (1970) [hereinafter cited as Bolt Report].
3. 283 Md. at 399, 391 A.2d at 377 (1978).
4. It has been argued that there is a trend favoring the admissibility of this technique. This "trend" is the result of so-called "neutral" studies conducted by Dr. Oscar Tosi of Michigan State University, in conjunction with the Michigan State Police Department, which determined that spectrographic voice identification was an accurate identifier of voices. *See* Black, Lashbrook, Nash, Oyer, Pedrey, Tosi & Truby, *Reply to "Speaker Identification by Speech Spectrograms: Some Further Observations",* 54 J. ACOUSTICAL SOC'Y AM. 535 (1973) [hereinafter cited as Tosi Report]. The neutrality of the Tosi studies was challenged by the Supreme Court of Michigan in People v. Tobey, 401 Mich. 141, 257 N.W.2d 537 (1977), wherein the court questioned the impartiality of Dr. Tosi, whose career was built upon "voiceprint" work. *Id.* at 539. Michigan refuses to admit spectrographic voice analysis into evidence.
5. 293 F. 1013, 1014 (D.C. Cir. 1923) (involving the exclusion of test results of a precursor to the polygraph test that measured deception by changes in the systolic blood pressure of the witness).
6. *Id.*
7. This standard has been extracted from dicta supplied by the *Frye* court. As that court explained: "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 . . . ." *Id.* at 1014.
8. Reed v. State, 283 Md. 374, 400, 391 A.2d 364, 377 (1978) (Smith, J., dissenting).

casenote analyzes the *Reed* decision and presents an overview of judicial treatment of spectrographic voice identification to date.

I. THE FACTS

In 1974, a woman was raped and sexually assaulted in a wooded area adjacent to her home. The victim later received a telephone call from a man who identified himself as the assailant. The woman immediately notified the police, who subsequently installed a tape recording device on her telephone to record any future communications from the caller. During the next few days, the woman received eight calls from her professed assailant; each of these conversations was recorded. In one conversation, the woman, acting upon instructions from the police, offered to pay the caller $1,000.00 if he would stop harassing her, and arrangements were made to deposit the money in a specified locker in a bus station. The money was deposited in the locker at the designated time and, pursuant to the caller's instructions, a key to the locker was placed in a specified location. Reed was arrested by the police after he obtained the key and proceeded to the locker. He was subsequently indicted in Montgomery County Circuit Court for rape and other charges arising out of the same incident.[9]

During the course of its investigation, the Montgomery County State's Attorney's Office compelled Reed to provide voice exemplars by having Reed repeat, into a telephone connected to a recording device, the same words that had been spoken to the victim in the earlier, recorded telephone calls.[10] These tapes, together with the tapes of the calls made by the professed assailant, were sent to the Voice Identification Unit of the Michigan State Police[11] where, after one inconclusive test, Reed was positively identified as the speaker in four of the seven telephone calls made to the victim.[12]

A pretrial hearing was held pursuant to the defendant's motion to suppress evidence of voice identification based upon these spectographic analyses. This motion was denied, and during the course of the trial the State introduced expert testimony based on spectrographic analysis, establishing that the voice on the master

---

9. *Id.* at 375-76, 391 A.2d at 365.
10. *Id.* at 376, 391 A.2d at 365. The compelled production of voice exemplars does not violate the fifth amendment privilege against compulsory self-incrimination, because the exemplars are used solely for identification purposes, and not for the testimonial or communicative content of the utterances. United States v. Dionisio, 410 U.S. 1 (1973).
11. The Michigan State Police force is considered the nationwide leader in the field of spectrographic voice analysis, primarily due to Dr. Tosi's initial study which was conducted in conjunction with that force. *See* note 4 *supra.*
12. The remaining three calls were incapable of spectrographic analysis due to technical reasons. One call was too short to obtain a sufficient number of words on which an analysis could be done, one call was too distorted, and no voice exemplar had been obtained for the third. 283 Md. at 376 n.1, 391 A.2d at 365 n.1.

tape and the voice on the exemplars were the same.[13] The jury returned a verdict of guilty, and Reed appealed the judgment on the ground that the admission of the tapes as well as the expert testimony analyzing them was reversible error.[14] The court of special appeals affirmed Reed's conviction.[15] The Court of Appeals of Maryland subsequently granted certiorari and reversed Reed's conviction, holding that evidence based upon spectrographic voice analysis is inadmissible.[16]

II. SPECTROGRAPHIC VOICE IDENTIFICATION

Proponents of spectrographic voice analysis premise their support of the technique on the theory that no two human voices are identical.[17] Because the vocal characteristics of any one individual are the result of complex physiological and mechanical functions within the individual, it is highly improbable that two people would share identical vocal characteristics.[18] This phenomenon has led

---

13. Reed v. State, 35 Md. App. 472, 477, 372 A.2d 243, 248 (1977). The expert called by the state was Sgt. Lonnie Smrkovski of the Michigan State Police Voice Identification Unit. Smrkovski had qualified as an expert on voice identification in at least six states and had never been rejected as an expert in the field by a court. *Id.* at 477 n.7, 372 A.2d at 248 n.7 (1977).
14. Reed appealed on several grounds: (1) whether the best evidence rule was violated when the court permitted a copy of the original tapes to be used for comparison purposes due to the loss of the original tape by the police, *Id.* at 484, 372 A.2d at 252; (2) whether the police tap placed on the victim's phone was legal, *Id.* at 487, 372 A.2d at 253; (3) whether the victim should have been allowed to testify that she recognized the appellant's voice in a police station line-up conducted after his arrest and whether that identification was otherwise unreliable, *Id.* at 489, 372 A.2d at 254 (1977); (4) whether the appellant was wrongfully compelled to provide voice exemplars, *Id.* at 491, 372 A.2d at 255; (5) whether the trial court erred in admitting into evidence a telephone call made by the appellant to the complainant two days prior to his scheduled trial at a time when he was under indictment and his counsel was not present, *Id.* at 494, 372 A.2d at 257. The court of special appeals answered all of these issues in the negative. The court of appeals, however, granted certiorari on two issues: *viz.* the admissibility of the spectrographic voice evidence, and the use of tape copies in violation of the best evidence rule. The *Reed* court never reached the best evidence issue because it reversed on the spectrographic voice analysis evidence. *See* 283 Md. 374, 377 n.2, 391 A.2d 364, 366 n.2.
15. 35 Md. App. 472, 372 A.2d 243 (1977).
16. 283 Md. 374, 391 A.2d 364 (1978)
17. *See generally* Decker & Handler, *Voiceprint Identification Evidence — Out of the* Frye *Pan Into Admissibility,* 26 AM. U.L. REV. 314, 318 (1977); Kersta, *Speaker Recognition and Identification by Voiceprint,* 40 CONN. B.J. 586, 589 (1966). *But see* Jones, *Danger — Voiceprints Ahead,* 11 AM. CRIM. L. REV. 549, 550 (1973).
18. An individual's speech is created by a complex mechanical and physiological operation. Air exhaled past the vocal cords causes them to vibrate and produce pressure waves that are then modified by the vocal cavities (throat, nose, and cavities formed in the mouth by the positioning of the tongue), and by articulators (lips, teeth, tongue, palate and jaw muscles). *See generally* Jones, *Danger — Voiceprints Ahead,* 11 AM. CRIM. L. REV. 549, 550 (1973). The interaction of these sound waves with both the articulators and the vocal cavities results in the production of human speech. *See also* A. MOENSSENS & F. INBAU, SCIENTIFIC EVIDENCE IN CRIMINAL CASES, 564-86 (2d ed. 1978); 19 AM. JUR. PROOF OF FACTS, *Spectrogram Voice Identification* at 423-41 (1967).

many scientists to adhere to the belief that a voice, when properly analyzed, can be used to identify accurately an unknown speaker.[19] Notwithstanding this belief, scientists differ as to the proper technique for voice analysis.[20]

A "spectrographic voice analysis" is a visual representation of human speech.[21] Stated simply, a voice spectrograph machine transforms the human sound waves into their respective frequencies and plots these frequencies on electronically sensitive paper.[22] A comparison of a spectrograph conducted on a known voice with a spectrograph of an unknown voice provides the basis for voice identification. If the frequencies of the two voices contain the requisite number of similarities, the proponents of the process claim that the two speakers are the same.[23] The leading proponent among the scientific community today in the area of spectrographic voice analysis is Dr. Oscar Tosi. In 1969, Dr. Tosi, a professor of audiology, speech science, and physics at Michigan State University, undertook a two-year study of voice spectrograms as an

---

19. *See generally* Decker & Handler, *Voiceprint Identification Evidence — Out of the* Frye *Pan Into Admissibility*, 26 AM. U.L. REV. 314 (1977); Kersta, *Speaker Recognition and Identification by Voiceprint*, 40 CONN. B.J. 586 (1966).
20. *See* Tosi Report, *supra* note 4. *See also* Bolt Report, *supra* note 2.
21. Reed v. State, 283 Md. 374, 414, 391 A.2d 364, 384 (1977) (Smith, J., dissenting).
22. The sound spectrograph consists of four basic parts: (1) a magnetic recording device, (2) a variable electronic filter, (3) a papercarrying drum that is coupled to the magnetic recording device, and (4) an electric stylus that marks the paper as the drum rotates.

    > The magnetic recording device is used to record a short sample of speech. The duration of the speech sample corresponds to the time required for one revolution of the drum. Then the speech sample is played repeatedly in order to analyze its spectral contents. For each revolution of the drum, the variable electronic filter passes only a certain band of frequencies, and the energy in the frequency band activates the electric stylus so that a straight line of varying darkness is produced across the paper. The degree of darkness represents the varying amplitude of the speech signal at the specified time within the given frequency band. As the drum revolves, the variable electronic filter moves to higher and higher frequencies, and the electric stylus moves parallel to the axis of the drum. Thus a pattern of closely-spaced lines is generated on the paper. This pattern, which is the spectrogram, has the dimensions of frequency, time and amplitude.

    A SUMMARY OF THE REPORT TO THE LAW ENFORCEMENT ASSISTANCE ADMINISTRATION, VOICE IDENTIFICATION RESEARCH 6 (LEAA Grant # NI-70-004, Feb. 1972) [hereinafter referred to as LEAA Study].
23. Developed by Bell Laboratories during the Second World War in an effort to identify and "track" German radio operators in the European theater and thereby monitor troop movements, *see* Reed v. State, 35 Md. App. 472, 473, 372 A.2d 243, 246 (1977), the spectrographic voice analysis technique was "rediscovered" in 1962 by Dr. Lawrence Kersta in response to the need of law enforcement agencies to identify telephone bomb threat callers. *See generally* Kamine, *The Voiceprint Technique: Its Structure and Reliability*, 6 SAN DIEGO L. REV. 213, 227 (1969); Decker & Handler, *Voiceprint Identification Evidence — Out of the* Frye *Pan and into Admissibility*, 26 AM. U.L. REV. 314, 320 n.37 (1977). A failure to duplicate forensic conditions, however, resulted in widespread criticism of Dr. Kersta's study.

identification tool, ultimately concluding that they are reliable.[24] Working in conjunction with the Michigan State Police, Tosi conducted his study of voice spectrographs in a more thorough and verifiable manner than earlier works in the field. This study provided empirical support for proponents of this identification technique,[25] and soon resulted in greater judicial acceptance of the controversial voice spectrograph as a method of identification.[26]

III. JUDICIAL TREATMENT

Only one court of final appeal admitted spectrographic voice analysis prior to the completion of the Tosi study.[27] In *Wright v. United States,*[28] the United States Court of Military Appeals, in affirming the court martial conviction of James Wright for making obscene and threatening phone calls to two women, ruled that expert testimony based upon spectrographic voice analyses purporting to identify Wright's voice as the voice recorded by one of the victims[29] was admissible. In the opinion of the *Wright* court, the evidence was admissible because members of the court-martial board were permitted to listen to the tape recorded voice of the offender and could thereby judge for themselves the accuracy of the spectrographic evidence.[30] Presumably, the *Wright* court believed that any undue weight that a jury might ordinarily attach to this scientific evidence would be offset by its ability to compare the voices aurally.[31]

During this same period, civilian courts of final appeal took a more skeptical approach to the admission of spectrographic voice analysis.[32] In 1971, however, after the completion of the Tosi study, the Supreme Court of Minnesota in *State ex rel. Trimble v.*

24. *See* LEAA Study, *supra* note 22.
25. Tosi's study indicated that his use of voice spectrographs yielded an error rate of approximately 6% false identifications, and approximately 12% false elimination. *Id.* at 14. False identification occurs when a match is not present but the examiner mistakenly believes there is one or a match is present but an examiner selects the wrong one. *Id.* at 10–11. False elimination occurs when an examiner fails to match voices when a voice is present. *Id.*
26. *Compare* State v. Cary, 99 N.J. Super. 323, 239 A.2d 680, *remanded for further testimony,* 53 N.J. 256, 250 A.2d 15, *aff'd,* 56 N.J. 16, 264 A.2d 209 (1968) (voice spectrograph held inadmissible due to failure to attain general acceptance among experts in the field) *with* State *ex rel.* Trimble v. Hedman, 291 Minn. 42, 192 N.W.2d 432 (1971) (voice spectrograph admitted into evidence on the grounds that difference of opinion in the scientific community goes to the weight, and not the admissibility of the evidence).
27. United States v. Wright, 17 C.M.A. 183, 37 C.M.R. 447 (1967).
28. *Id.*
29. *Id.* at 189, 37 C.M.R. at 453.
30. *Id.* "Voice identification of a person by human ear is a commonplace experience, and has long been recognized in the courts." *Id.* at 188, 37 C.M.R. at 453.
31. *Id.*
32. *See, e.g.,* People v. King, 266 Cal. App. 2d 437, 72 Cal. Rptr. 478 (1968) (admission of identification based on voiceprint held reversible error).

Hedman[33] became the first civilian court to sustain the admissibility of spectrographic voice identification evidence. Although the evidence in that case was admitted for the purpose of establishing probable cause to issue arrest and search warrants, the court, citing the testimony of Dr. Tosi, held that "in the trial of the case spectrograms ought to be admissible for the purpose of corroborating voice identification by aural means."[34] According to the *Trimble* court, disagreement within the relevant scientific community does not, of itself, make the opinion of an expert in that field inadmissible. "Where experts disagree," the court stated, "it is for the fact finder . . . to determine which [expert opinion] is more credible and therefore more acceptable."[35] Since *Trimble,* the majority of jurisdictions confronted with such evidence have held it admissible,[36] albeit on different grounds.[37] Additionally, it should be noted that many jurisdictions that have upheld the admissibility of spectrographic voice analysis have declined to decide whether such evidence is routinely admissible.[38]

---

33. 291 Minn. 442, 192 N.W.2d 432 (1971).
34. *Id.* at 458, 192 N.W.2d at 441.
35. *Id.* at 456, 192 N.W.2d at 440.
36. *See* United States v. Williams, 583 F.2d 1194 (2d Cir. 1978), *cert. denied,* 99 S. Ct. 1025 (1979); United States v. Baller, 519 F.2d 463 (4th Cir.), *cert. denied,* 423 U.S. 1019 (1975); United States v. Jenkins, 525 F.2d 819 (6th Cir. 1975); United States v. Sample, 378 F. Supp. 44 (E.D. Pa. 1974); Alea v. State, 265 So. 2d 96 (Fla. App. 1972); State v. Williams, 388 A.2d 500 (Me. 1978); Commonwealth v. Lykus, 367 Mass. 191, 327 N.E.2d 671 (1975); State *ex rel.* Trimble v. Hedman, 291 Minn. 442, 192 N.W.2d 432 (1971); People v. Rogers, 86 Misc. 2d 868, 385 N.Y.S.2d 228 (Sup. Ct. 1976); State v. Olderman, 44 Ohio App. 2d 130, 336 N.E.2d 442 (1975).
37. *See, e.g.,* United States v. Baller, 519 F.2d 463, 466 (4th Cir.) (trial judge's discretion as to whether evidential value outweighs prejudicial harm was properly exercised in the admission of the spectrographic evidence), *cert. denied,* 423 U.S. 1019 (1975); Worley v. State, 263 So. 2d 613, 614 (Fla. Dist. Ct. App. 1972) (evidence admissible to corroborate defendant's identification by other means); State v. Williams, 338 A.2d 500, 504 (Me. 1978) (the trial judge is given the discretion to admit scientific evidence which has not yet achieved the general acceptance in the relevant scientific community if the proffered evidence is sufficiently reliable to be held relevant); State *ex rel.* Trimble v. Hedman, 291 Minn. 442, 450, 192 N.W.2d 432, 440 (1971) (difference of opinion in the scientific community goes to the weight and not to the admissibility of the evidence); People v. Rogers, 86 Misc. 2d 868, 385 N.Y.S.2d 228, 237 (1976) (spectrographic voice identification has been generally accepted by those scientists who would be expected to be familiar with its use).
38. *See, e.g.,* Hodo v. Superior Court, 30 Cal. App. 3d 780, 106 Cal. Rptr. 547 (1973) (spectrographic evidence was corroborative of other direct testimony inculpating the defendant); Alea v. State, 265 So. 2d 96 (Fla. Dist. Ct. App. 1972) (additional evidence was present to corroborate the identity of the defendant as the one who committed the crime); Worley v. State, 263 So. 2d 613 (Fla. Dist. Ct. App. 1972) (evidence against the defendant was already sufficient to convict him); State *ex rel.* Trimble v. Hedman, 291 Minn. 442, 192 N.W.2d 432 (1971) (spectrographic analysis admissible for purposes of establishing probable cause); State v. Andretta, 61 N.J. 544, 296 A.2d 644 (1972) (specifically declining to decide whether spectrographic analysis would be routinely admissible at trial).

In Worley v. State, *supra,* a case in which the evidence against the defendant was already sufficient to convict him, the court stated that:

The debate over the proper standards for governing the admissibility of scientific evidence has divided the jurisdictions of this country. On one end of the spectrum are those jurisdictions that refuse to admit any scientific evidence until the technique has gained the general acceptance of the scientific community in which it belongs.[39] This stricter standard of admissibility arose out of the case of *Frye v. United States,*[40] which held inadmissible a precursor of the polygraph test:[41]

> Just when a scientific principle or discovery crosses the line between experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained *general acceptance in the particular field in which it belongs.*[42]

On the other end of the admissibility spectrum are those jurisdictions that follow the guidelines established in Rule 702 of the Federal Rules of Evidence.[43] Rule 702 allows the admission of any scientific evidence upon a showing of reliability and allows any dispute within the scientific community as to the accuracy of the process to go to the weight as opposed to the admissibility of the evidence.[44] It is this more liberal view that has been propounded by Dean McCormick, who wrote that "any relevant conclusions which are supported by a qualified expert witness should be received unless

---

> [T]his decision must be limited by our facts. We hold voiceprints were properly admitted to corroborate the defendant's identification by other means . . . . [W]e do not decide if . . . voiceprint identification, standing alone, would be sufficient to sustain the identification and conviction of the defendant.

263 So. 2d at 614-15. *See generally* Greene, *Voiceprint Identification: The Case in Favor of Admissibility,* 13 AM. CRIM. L. REV. 171 (1975).

39. *See* Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923).
40. *Id.*
41. *See* note 5 *supra.*
42. 293 F. 1013, 1014 (D.C. Cir. 1923) (emphasis added).
43. The federal rule provides as follows:
> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise.

FED. R. EVID.702.

44. *Id. See also* United States v. Franks, 511 F.2d 25 (6th Cir. 1975); United States v. Stifel, 433 F.2d 431, 438 (6th Cir. 1970) (quoted in United States v. Baller, 519 F.2d 463, 466 (4th Cir.), *cert. denied,* 423 U.S. 1019 (1975)); Reed v. State, 283 Md. 374, 403, 391 A.2d 364, 379 (1978) (Smith, J., dissenting).

there are other reasons for exclusion."[45] The prevalent reason for exclusion in the jurisdictions applying this standard has been the failure of the probative value of the scientific evidence to exceed the prejudicial effect such evidence may have upon a jury.[46]

A. The Reed *Decision*

There are two basic premises underlying the majority's adoption of the *Frye* standard of admissibility. First, fairness to the defendant requires that before the results of a scientific process can be used against him, he is entitled to a scientific judgment on the reliability of the process.[47] Second, because the scientific method in dispute must be one that is generally accepted within the relevant scientific community, the defendant will have a "minimal reserve" of experts who can critically examine the validity of the scientific determination in his particular case.[48]

1. Fairness to the Defendant

The *Reed* court maintained that the "apparent objectivity of the [spectrograph] machine may suggest a degree of certainty inconsistent with the subjective aspects of the enterprise."[49] The majority feared that the admission of the scientific evidence, particularly when presented by experts, would cause a lay jury to attach an inordinate amount of weight to the evidence and to accept the spectrograph identification as infallible.[50] Notwithstanding the *Reed* trial judge's carefully worded instruction that the jury could either accept or reject an expert's opinion regarding spectrographs or assign to the opinion whatever weight it believed the opinion

---

45. C. McCormick, Handbook of the Law of Evidence § 203, at 489 (2d ed. 1972) [hereinafter cited as McCormick's]. " 'General scientific acceptance' is a proper condition for taking judicial notice of scientific facts, but not a criterion for the admissibility of scientific evidence." *Id.*
46. A lie detector, or polygraph, test is a common example of this possible prejudicial effect. *See, e.g.*, United States v. Alexander, 526 F.2d 161, 168 (8th Cir. 1975). *But see* United States v. Williams, 583 F.2d 1194 (2d Cir. 1978), *cert. denied*, 99 S. Ct. 1025 (1979); State v. Williams, 388 A.2d 500 (Me. 1978) (probative value of spectrographic voice analysis outweighs prejudicial effect). *See generally* Note, 64 Cornell L. Rev. 875 (1979).
47. Reed v. State, 283 Md. 374, 386, 391 A.2d 364, 370 (1978).
48. *Id.* at 386, 391 A.2d at 370 (quoting United States v. Addison, 498 F.2d 741, 744 (D.C. Cir. 1974)).
49. *Id.* at 385, 391 A.2d at 370.
50. *Id.*

merited,[51] the court of appeals found the charge inadequate.[52] Because a "misleading aura of certainty . . . often envelops a new scientific process obscuring its currently experimental nature,"[53] the court of appeals chose to exclude spectrographic evidence from the consideration of the jury.[54]

In addition, the *Reed* court maintained that the *Frye* standard of admissibility would enhance the conduct of a trial by guaranteeing that each judgment be rendered on the merits of the litigation.[55] Employing this standard, the court reasoned, would preclude each trial from degenerating into a trial of the scientific process involved.[56] Further, the *Frye* standard would guarantee a uniform result within the jurisdiction regarding the validity of a particular piece of scientific evidence. This would not be the case if each judge

---

51. *Id.* at 492-93, 391 A.2d at 422-23. The instruction to the jury consisted of the following:

> Ladies and gentlemen, the rules of evidence ordinarily do not permit a witness to testify as to his opinions or conclusion. There are exceptions. I think in the course of this trial you have learned that even a person without prior experience or expertise, particular experience, training or expertise, is permitted by our law if they are familiar with a particular voice or have heard a particular voice, to express an opinion as to whether another voice is the same as or different from the other voice which they heard. But generally speaking, a witness is not allowed to express an opinion or a conclusion. An expert witness is an exception to this rule.
>
> A witness who by education and experience has become expert in any art, science or profession, may be permitted to state his opinion, as to a matter in which he is versed and which is material to the case. He may also state the reasons for that opinion. This testimony should be considered and weighed by you like any other evidence in the case and given the weight to which you deem the opinion to be entitled.
>
> You may reject the opinion if the facts upon which it is based have not been established to your satisfaction by the evidence, or if you are not satisfied with the reasons given in support of the opinion. Where expert witnesses disagree, it is for you to decide which one, if either, is to be believed.
>
> In this particular case, ladies and gentlemen, you have heard testimony pertaining to voice identification with the aid of spectrographic analysis. The same rules apply to that type of testimony as I just gave you. It is your function to weigh the testimony of the various witnesses when they are testifying in that area and to assign such weight at all, some weight, or much weight, as you find it to be entitled.

52. *Id.* at 398-99, 391 A.2d at 377.
53. *Id.* at 386, 391 A.2d at 370 (quoting People v. Kelly, 17 Cal. 3d 24, 31-32, 549 P.2d 1240, 1245, 130 Cal. Rptr. 144, 149 (1976)).
54. Reed v. State, 283 Md. 374, 399, 391 A.2d 364, 377 (1978).
55. *Id.* at 388, 391 A.2d at 371. The majority wrote:

> The introduction of evidence based on a scientific process, not yet generally accepted in the scientific community, is likely to distract the fact finder from its central concern, namely the rendition of a judgment on the merits of the litigation. Without the *Frye* test or something similar, the reliability of an experimental scientific technique is likely to become a central issue in each trial in which it is introduced, as long as there remains serious disagreement in the scientific community over its reliability.

56. *Id.*

or jury were permitted to determine that issue for itself. Under the *Frye* test, the court explained, all defendants will face the same burdens with regard to scientific techniques.[57] "If . . . on the other hand," Judge Eldridge wrote on behalf of the court, "a novel scientific process does achieve general acceptance in the scientific community, there will likely be as little dispute over its reliability as there is now concerning other areas of forensic science which have been deemed admissible under the *Frye* standard, such as blood tests, ballistics tests, etc."[58]

2. Minimal Reserve of Experts

The second premise upon which the *Reed* court based its adoption of the *Frye* standard was the belief that *Frye* provides the defendant a greater opportunity to rebut spectrographic evidence with expert witnesses of his own. *Frye* requires that a scientific process attain general acceptance in the field in which it belongs before such evidence is admissible.[59] With a scientific process such as spectrographic voice identification, however, there is considerable controversy concerning the particular scientific field in which it should be placed.[60] The trial court in *Reed* concluded that the *Frye* test requires general acceptance among the scientific group *actually* engaged in the use of spectrograph analysis and in the experimentation with the technique.[61] That court specifically excluded from the relevant scientific community the broader aggregate of scientists engaged in the speech and hearing sciences, among whom, the court conceded, there probably was not acceptance of spectrographic voice analysis.[62] The *Reed* majority rejected this approach and stated that there was no basis for eliminating from consideration "the opinions of those scientists in the field of speech and hearing, as well as related fields, who, by training and education, are competent to make professional judgments concerning experiments undertaken by others."[63] The reasoning behind the majority's position is that the

57. *Id.*
58. *Id.*
59. Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923).
60. In his dissent, Judge Smith suggests that anyone with training in the field of physics would be a member of the "relevant scientific community." 283 Md. at 495, 391 A.2d at 424. Several courts have defined the relevant scientific field as those scientists who would be acquainted with the use of the process involved. *See, e.g.*, Commonwealth v. Lykus, 367 Mass. 191, 196, 327 N.E.2d 671, 677 (1975). Finally, at least one court has held that spectrographic voice analysis is not properly placed within any one established category of science but rather requires a knowledge of anatomy, physiology, physics, psychology and linguistics. *See, e.g.*, People v. King, 266 Cal. App. 2d 437, 72 Cal. Rptr. 478 (1968).
61. Joint Record Extract at 82, Reed v. State, 283 Md. 374, 391 A.2d 364 (1978).
62. *Id.* at 83.
63. Reed v. State, 283 Md. 374, 399, 391 A.2d 364, 377 (1978).

defendant must be guaranteed a "minimal reserve of experts" to dispute the scientific process that is being used against him.[64]

The need for this reserve of experts can best be illustrated by a hypothetical situation in which only one scientist had done work in a particular area of scientific development. Under the narrow interpretation of the *Frye* standard, as expounded by the *Reed* trial court, that scientific evidence would most certainly be admitted because of the defendant's inability to rebut the validity of the evidence presented for want of an expert of his own to testify. The court of appeals, however, would allow the defendant to oppose introduction of the scientific evidence through the use of scientific experts who are deemed competent to make a professional judgment regarding that evidence. Their failure to have worked directly with the process would be deemed irrelevant to the issue of their ability to refute the evidence.[65]

The majority in *Reed* concluded that evidence adduced at the trial level indicated that spectrographic voice analysis had not been accorded the general acceptance of the relevant scientific community and was, therefore, inadmissible. This holding was due in part to testimony which indicated that, of the experts who had done work with spectrographic voice identification, fifteen were proponents of the process and five opposed it.[66] Additionally, evidence was presented indicating that the Speech Communications Section of the Acoustical Society of America had voted unanimously against an endorsement of the reliability of the procedure.[67] The majority did not rule out the possibility that spectrographic voice analysis evidence would be admissible in the future following a showing of general scientific acceptance of the technique, but concluded that such a showing was absent in this case.[68]

---

64. *Id.* at 386, 391 A.2d at 370 (quoting United States v. Addison, 498 F.2d 741, 744 (D.C. Cir. 1974)).
65. Of course, because of his failure to have worked directly with the process, the degree of expertise the witness has by virtue of his studies in a related area would be seriously considered by the trial judge in determining the admissibility of the evidence. The *Reed* dissent maintains that such a minimal reserve of experts is available, citing to the Practicing Law Institute's "Voiceprint Defense Package" which lists the witnesses available for the defense in spectrographic voice identification cases. Reed v. State, 283 Md. 374, 497, 391 A.2d 364, 425 (1978). According to testimony adduced at trial, the number of scientists who have actually worked with spectrographic voice analysis is approximately twenty. *Id.* at 393, 391 A.2d at 374. Of these, five are opposed to the process and fifteen are proponents. *Id.* Applying the trial court's standard of admissibility (which the dissent would adopt), the relevant scientific community is therefore twenty. Query: Is the limitation of five expert witnesses to be considered a "minimal reserve" of experts?
66. *Id.* at 393, 391 A.2d at 374.
67. *Id.* at 394, 391 A.2d at 374.
68. *Id.* at 399, 391 A.2d at 377.

B. The Reed *Dissent*

In a 104-page opinion authored by Judge Smith and concurred in by Chief Judge Murphy and Judge Orth,[69] the dissent maintained that spectrographic voice evidence should be deemed admissible as evidence in a criminal trial and that any dispute within the scientific community as to the technique's accuracy should go to the weight and not the admissibility of the evidence.[70] Explaining that Maryland had never adopted a standard of admissibility similar to that employed in *Frye*,[71] the dissent contended that the admission of expert testimony predicated upon a scientific technique is within the sound discretion of the trial court.[72] The *Reed* majority pointed out, however, that when expert testimony based on the application of *new* scientific techniques is involved, "prior to the admission of such testimony, it must be established that the particular scientific method is itself reliable."[73] Arguing that spectrographic voice analyses meet this requirement, the dissent took issue with the majority's use of the *Frye* standard in determining reliability. Recalling that *Frye* dealt with the admissibility of a precursor of the polygraph test,[74] Judge Smith contended that the more strict standard of admissibility established by that case was necessary only for that particular form of scientific evidence because a "polygraph examination embraces a number of complexities not present in the areas of fingerprint, handwriting, voice-print, ballistics and neutron activation analysis. These deal primarily with physical phenomena rather than psychological responses."[75] The dissent concluded that such a strict standard is not necessary for the admission of spectrographic voice identification evidence.[76]

In support of his thesis, Judge Smith examined other scientific procedures dealing with "physical phenomena" and their respective treatment by various courts in this country.[77] The dissent concluded that other jurisdictions have admitted scientific evidence despite a contemporaneous disagreement among the relevant scientific community as to its accuracy.[78] Judge Smith cited as an example the admission of *fingerprint identification* evidence, which was first upheld by an Illinois appellate court in 1911 upon the principle that "whatever tends to prove any material fact is relevant and competent."[79] Judge Smith conceded, however, that the Court of

69. *Id.* at 504, 391 A.2d at 428 (Smith, J., dissenting).
70. *Id.* at 457, 391 A.2d at 406 (Smith, J., dissenting).
71. *Id.*
72. *Id.* at 452, 391 A.2d at 403 (Smith, J., dissenting).
73. *Id.* at 380, 391 A.2d at 367.
74. *See* note 5 *supra.*
75. Reed v. State, 283 Md. 374, 449, 391 A.2d 364, 401 (1978) (Smith, J., dissenting).
76. *Id.* at 451, 391 A.2d at 402 (Smith, J., dissenting).
77. *Id.* at 417-51, 391 A.2d at 386-402.
78. *Id.*
79. People v. Jennings, 252 Ill. 534, 549, 96 N.E. 1077, 1082 (1911).

Appeals of Maryland was not faced with the issue of admissibility until 1944, at which time the court took judicial notice of the process' infallibility.[80] The Maryland court therefore was not then faced with the split among the relevant scientific community present in the *Reed* case.[81] Citing a 1902 opinion of Oliver Wendell Holmes,[82] who was at that time Chief Judge of the Supreme Judicial Court of Massachusetts, the *Reed* dissent explained that the then-novel science of *firearms identification* was admitted into evidence on the theory that the jury could visually compare the markings on the test bullet and the expended bullet itself, thereby allowing it to make a decision as to the accuracy of the identification independent of expert testimony.[83] The Maryland court first heard an appeal of the admission into evidence of ballistics identification in 1951 and by that time the science was concededly "well established."[84] Once again, Maryland was not confronted with a difference of opinion among the scientific community as to the accuracy of the scientific evidence. Judge Smith explained that by the time the results of a *blood test* were at issue before an appellate court, there was no dispute as to the accuracy of the process itself.[85] Citing to the Maryland case of *Shanks v. State,*[86] however, the dissent stated that such blood tests have been held admissible as evidence even though the results of the tests were inconclusive.[87] Unlike the spectrographic issue confronting the *Reed* court, however, the dispute in *Shanks* did not concern the reliability of the process itself, but rather was concerned with the probative value to be attached to the evidence when two persons had the same blood type.[88]

The dissent concluded that jurors are not so easily swayed by scientific evidence as to warrant application of the *Frye* standard in cases involving spectrographic voice analysis.[89] Citing Chief Judge Marbury's opinion for the court in *Shanks,*[90] Judge Smith observed: "Judges and juries must be presumed to have average intelligence at least, and no assumption to the contrary can be made for the purpose of excluding otherwise admissible testimony."[91]

---

80. Murphy v. State, 184 Md. 70, 85-86, 40 A.2d 239, 246 (1944).
81. Reed v. State, 283 Md. 274, 392-93, 391 A.2d 364, 373-74 (1978).
82. Commonwealth v. Best, 180 Mass. 492, 62 N.E. 748 (1902).
83. *Id.* at 495-96, 62 N.E. at 750.
84. Edwards v. State, 198 Md. 132, 81 A.2d 631 (1951).
85. Reed v. State, 283 Md. 374, 430, 391 A.2d 364, 392 (1978) (Smith, J., dissenting).
86. 185 Md. 437, 45 A.2d 85 (1945).
87. Reed v. State, 283 Md. 374, 432-33, 391 A.2d 364, 393 (1978) (Smith, J., dissenting).
88. *Id.*
89. *Id.* at 502, 391 A.2d at 427 (Smith, J., dissenting).
90. 185 Md. at 449, 45 A.2d at 90.
91. 283 Md. at 502-03, 391 A.2d at 427-28 (Smith, J., dissenting).

C. *The Significance of* Reed

Although Maryland courts have heretofore readily accepted the admissibility into evidence of other scientific techniques, it cannot be said that *Reed* necessarily represents a deviation from prior judicial treatment of such evidence. *Reed* was the first case in which the Maryland courts were confronted with determining the admissibility of a scientific technique at a time when the technique in controversy was still in its formative years. In all prior cases, the scientific techniques at issue had been in use for decades before the question of their admissibility reached the Maryland courts.

Foreshadowings of the *Reed* decision, however, can be found as far back as 1945 when, writing for the court of appeals in *Shanks,* Chief Judge Marbury stated,

> In the early cases evidence of the tests was not admitted, because the courts here were not convinced of their general acceptance and reliability . . . . Blood tests are now accepted everywhere, scientifically, as accurate . . . .[92]

It is evident that the *Shanks* court readily admitted the blood tests into evidence because of longstanding and widespread acceptance in other jurisdictions. It may be inferred from the *Shanks* court's acknowledgment that the tests were not admitted when the Maryland courts were not convinced of their general acceptance, however, that had blood tests not achieved the acceptance that they had by 1945, it is likely that the result in *Shanks* would have been different.

Additionally, in more recent cases in which the Maryland courts have been confronted with determining the admissibility of novel scientific techniques into evidence in criminal cases, the courts have employed language and analysis indicating a predilection toward the *Frye* standard of admissibility. In 1976, in *Smith v. State,*[93] the Court of Special Appeals of Maryland refused to allow the results of a psychological stress evaluation test into evidence, holding that such "tests have not yet attained sufficient scientific acceptance as an accurate and reliable means of ascertaining truth or deception."[94] In the earlier case of *Rawlings v. State,*[95] the court of special appeals employed a similar analysis in excluding from evidence the results of a polygraph examination.[96]

---

92. Shanks v. State, 185 Md. 437, 440, 45 A.2d 85, 86 (1945) (citations omitted).
93. 31 Md. App. 106, 355 A.2d 527 (1976).
94. *Id.* at 119-20, 355 A.2d at 535 (quoting State v. La Forest, 106 N.H. 159, 160, 207 A.2d 429, 430 (1965)).
95. 7 Md. App. 611, 256 A.2d 704 (1969).
96. *Id.* at 614-15, 256 A.2d at 706.

IV. CONCLUSION

Although spectrographic voice analysis was greeted with initial skepticism, since the completion of Dr. Tosi's study[97] courts have been increasingly willing to admit such evidence.[98] Those jurisdictions that have admitted the results of this scientific technique have almost uniformly applied the *Frye* standard of admissibility, but have defined the "relevant scientific community" more narrowly than did the majority in *Reed.*[99]

In his dissent, Judge Smith concluded that after the majority's holding in *Reed,* no trial judge "in his right mind" would, in the future, allow the admission into evidence of spectrographic voice analyses.[100] The *Reed* decision, however, does not preclude the admission into evidence of spectrographic voice analysis for all time but only until such time as the process achieves the general acceptance of the relevant scientific community. According to *Reed,* the relevant community includes both those scientists who have experimented with the spectrograph machines and those within the broader field of speech and hearing sciences.[101] With the proper standards now established by the *Reed* court, presumably trial judges in this state are capable of accurately polling this portion of the scientific community with regard to the accuracy of the technique. With the increased experimentation in the field of spectrographic evidence, combined with the narrow four-to-three decision of the *Reed* court and the new composition of the court of appeals,[102] the future disposition of spectrographic evidence is far less certain than the *Reed* dissent would have us believe.

Daniel R. Anderson†

---

97. *See* text accompanying notes 17-26 *supra.*
98. *See* note 36 *supra.*
    Because an increasing number of jurisdictions have admitted this evidence, an argument can, and has, been made that there is a trend in favor of admissibility. Recent opinions denying admission of spectrographic voice evidence, however, suggest that there may not be a clear trend. *See* Brown v. United States, 384 A.2d 647, 650 (D.C. 1978) (trial court's admission of spectrographic evidence held as harmless error); People v. Tobey, 401 Mich. 141, 148, 257 N.W.2d 537, 540 (1977) ("We conclude that . . . voiceprint evidence has [not] achieved general scientific acceptance as a reliable identification device . . . ."); Commonwealth v. Topa, 471 Pa. 223-32, 369 A.2d 1277, 1282 (1977) ("[V]oiceprint identification has not, as yet, been generally accepted by the scientific community concerned with acoustical science").
99. Notable exceptions are those cases cited in note 44 *supra,* wherein the balancing test employed in the Federal Rules of Evidence was adopted.
100. *Id.* at 504, 391 A.2d at 428.
101. *Id.* at 399, 391 A.2d at 377.
102. Judge Davidson was appointed to the bench upon the death of Judge Levine.

† Mr. Anderson received a J.D. from the School of Law in May of 1979, and was a staff member of the *University of Baltimore Law Review* throughout the publication of volume eight. This casenote, a product of his work while a member of the *Law Review,* was delayed in publication because of space limitations in prior issues. — ED.