1993

Introduction of Scientific Evidence in Criminal Cases

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by H. Patrick Furman

Scientific evidence is being used in an increasing number of criminal cases. An expert witness offering testimony about such matters as scientific experiments, test results and psychological syndromes appeals to the jury's desire for "the facts" and creates a scientific aura that may significantly strengthen a case.

Criminal lawyers have long been familiar with certain types of expert scientific testimony. Experts have testified for years about the results of fingerprint comparisons, ballistics tests, alcohol concentration in the blood and handwriting examination. There is a clear trend among criminal lawyers toward using more expert testimony. There is also an equally clear trend among the courts to allow the introduction of more and different types of such testimony.

This article explores issues relating to the admissibility of expert testimony. The two legal tests used to evaluate such testimony are discussed, as are specific applications of these tests and some miscellaneous issues. The use of expert testimony in sanity cases is not discussed.

The Two Standards of Admissibility

Since 1923, the *Frye* test[1] has been the traditional and most widely used way of judging the admissibility of scientific evidence. The defendant in *Frye v. U.S.* attempted to introduce evidence of a systolic blood pressure test which he claimed showed that he was telling the truth when he denied responsibility for the offense. After the trial court rejected this offer, the District of Columbia Court of Appeals affirmed the conviction. Acknowledging that it is not always easy to determine precisely when a scientific test moves from the experimental to the demonstrable state, the appellate court held that scientific evidence should not be admitted unless the principles on which the procedure is based are "sufficiently established to have gained general acceptance in the particular field in which it belongs."[2]

The second test for the admissibility of scientific evidence is set forth in Colorado Rules of Evidence ("C.R.E.") 702, which allows the introduction of "scientific, technical or other specialized knowledge [if it] will assist the trier of fact to understand the evidence or to determine a fact in issue." This is obviously an easier foundational hurdle for counsel to clear than the *Frye* test.

When introducing scientific evidence, counsel first must determine which standard applies. The rule in Colorado, set forth in *People v. Hampton*,[3] is that the *Frye* test should be applied "to novel scientific devices and processes involving the manipulation of physical evidence."[4] The *Hampton* court suggested that, under this definition, the *Frye* test would be applicable to polygraph examinations, experimental blood typing, processes, voice and bite mark identification and microscopic examination of gunshot residue. In theory, scientific evidence which does not fit the *Hampton* description should be evaluated using C.R.E. 702.

Application of C.R.E. 702 Test

The test of C.R.E. 702 was described further in the recent Colorado Supreme Court case of *People v. Fasy*.[5] During the trial of the defendant for sexual assault on a child, the prosecution introduced evidence from a psychologist that the victim suffered from post-traumatic stress disorder. The Court of Appeals reversed the defendant's conviction,[6] finding that the testimony amounted to an improper assertion that the victim was being truthful on a particular occasion.[7] The Colorado Supreme Court reversed the Court of Appeals and reinstated the conviction, finding the testimony admissible under C.R.E. 702.

The Supreme Court noted that the C.R.E. 702 standard should be employed on a case-by-case basis. It directed trial courts to ask the following question: "On *this subject* can a jury from *this person* receive appreciable help."[8] [*Italics in original.*] The court then found that the psychologist's testimony assisted the jury in understanding the victim's behavior—particularly her symptoms—and her delay in notifying the authorities after the incident.

In *Hampton*,[9] the Colorado Supreme Court used the C.R.E. 702 test to approve the introduction of "rape trauma syndrome" evidence. The court held that, under C.R.E. 702, rape trauma syndrome

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This newsletter is prepared by the Criminal Law Section of the Colorado Bar Association. This month's column was written by column editor H. Patrick Furman.

evidence was admissible because it was helpful to the jury in understanding the delay in the reporting of the offense. Understanding this delay, the court said, would help the jury decide whether a sexual assault had occurred.

In *Campbell v. People*,[10] the Colorado Supreme Court held that C.R.E. 702 was the proper test to determine the admissibility of expert testimony relating to the reliability of eyewitness identification. The court rejected the prosecution's argument that there should be a *per se* rule barring expert testimony on eyewitness identification. It also rejected the defense argument that there should be a *per se* rule that such evidence was admissible. Reiterating that the *Frye* test is still applicable to new scientific procedures, the court described this identification testimony as involving

> an explanation by a psychologist on how certain factors, such as stress and post-event information, can affect memory and perception, and thus eyewitness identification.[11]

The court held that C.R.E. 702 was the appropriate test. It specifically noted that its decision is not intended to open the floodgates for the introduction of such evidence.

On remand, the trial court reviewed the offer of proof as to the expert testimony concerning the weaknesses inherent in eyewitness identification and re-affirmed its decision to exclude the testimony. The trial court therefore affirmed the defendant's conviction without a new trial. The trial court did find that the testimony was admissible in the companion case. On appeal, the Court of Appeals reversed.[12]

The court held that expert testimony on eyewitness identification should be evaluated using the test established in *United States v. Downing*.[13] The three factors to be considered are (1) the reliability of the scientific principles on which the testimony is based, (2) the danger that the testimony may overwhelm or mislead the jury and (3) the degree to which the testimony "fits" the specific case at hand. Using this test, the court found the expert testimony admissible under C.R.E. 702, largely because of the good "fit" between the testimony and the facts.

The trial court found that the probative value in this expert testimony was substantially outweighed by the danger that it would confuse or mislead the jury and excluded the testimony under C.R.E. 403. The Court of Appeals rejected this conclusion, particularly in light of the fact that the trial court was willing to allow the testimony to be introduced in the companion case. The court made clear its agreement with the Supreme Court's warning that this decision was not intended to open the floodgates to expert testimony on this issue. It is clear that the specific facts of each case will bear strongly on the admissibility of expert testimony on identification.

"The U. S. Supreme Court recently granted *certiorari* case with potentially far-reaching implications for the *Frye* test."

In *People v. Young*,[14] the Court of Appeals reversed the defendant's manslaughter conviction, in part because the trial court refused to allow her to present expert testimony in support of her claims of self-defense and heat of passion. The Court of Appeals rejected the prosecution argument that this subject matter was within the knowledge of the jury and noted that this testimony would have been helpful to the jury in deciding the claims of self-defense and heat of passion, which is all that C.R.E. 702 requires. For the same reason, the court rejected the trial court's conclusion that the testimony would have been a waste of time and excludable under C.R.E. 403.

The defendant in *Lanari v. People*[15] sought to introduce expert psychiatric evidence about the characteristics of heat of passion and about his state of mind in defense of the allegation that he shot his wife and a friend. The trial court barred this testimony, reasoning that heat of passion was within the knowledge of jurors and that neither insanity nor impaired mental condition had been raised. The Court of Appeals affirmed.[16] However, the Supreme Court held it erroneous to hold that expert opinion is never available in heat-of-passion cases.[17] The Supreme Court held that such evidence should be evaluated on a case-by-case basis under C.R.E. 702.

Application of the *Frye* Test

Compared to the use of C.R.E. 702, there are far fewer situations in which the courts apply the *Frye* test. The Colorado Supreme Court has applied the *Frye* test only to polygraph examinations.[18] The Court of Appeals has applied the test to certain serological examinations and to D.N.A. testing. The Supreme Court is currently reviewing the decision involving the D.N.A. testing.

In *People v. Saathoff*,[19] the Court of Appeals affirmed the defendant's murder conviction against a claim, among others, that the trial court improperly allowed a prosecution expert witness to testify about multi-system electrophoresis blood testing. A forensic serologist was qualified as an expert and testified that electrophoresis is a technique used to separate proteins—such as those found in blood—on the basis of their electrical charge. The results appear as banding patterns on a gelled plate. The expert testified that multi-system electrophoresis is widely accepted in the scientific community as a method of typing blood and that the accepted procedures were utilized in this case.

Several other states have found multi-system electrophoresis blood testing to be reliable and admissible.[20] In *Saathoff*, the Court of Appeals employed the *Frye* test and held that the evidence presented was adequate to support the admission of electrophoresis test results.

In *People v. Banks*,[21] the Court of Appeals assumed, without being entirely certain, that the *Frye* test was applicable to evidence that the defendant was a "weak secretor." On this understanding, the court affirmed the defendant's sexual assault conviction. The court held that (1) the expert who testified was well qualified; (2) the procedure itself, while unusual, is well accepted by experts; and (3) the defendant had ample opportunity to cross-examine the expert.

In *Hampton*,[22] the Supreme Court suggested that the *Frye* test was applicable to voice analysis. In *People v. Drake*,[23] the Court of Appeals appears to have taken the hint. The defendant in *Drake* attempted to introduce evidence from a linguistics specialist familiar with voice print analysis. The offer of proof was that the expert would testify that, on the basis of voice inflection, speech pattern, intonation and other characteristics, he had concluded that certain tape-recorded statements by the defendant were not truthful.

The trial court concluded that the discipline of voice analysis was not sufficiently established in the scientific community to permit the jury to consider this testimony. The Court of Appeals noted that many commentators and oth-

er courts had rejected voice analysis evidence on the ground that it is not reliable. While the court did not cite either *Hampton* or *Frye*, it appears to have used *Hampton*'s description of which test to apply to determine that voice analysis evidence should be examined under *Frye*. The court then used the *Frye* test to affirm the trial court's conclusion that the evidence was not sufficiently reliable.

DNA Comparisons

One important issue which is still under consideration by the appellate courts in Colorado is the use of DNA evidence. In *People v. Fishback*,[24] the Court of Appeals held admissible the results of comparisons between the DNA of the defendant and DNA found in semen samples at the scene of the sexual assault with which he was charged. Acknowledging that this was a case of first impression in Colorado, the court avoided deciding which test applied to DNA evidence by finding that the evidence proffered in this case met either standard.

In *Fishback*, the Court of Appeals analyzed the *Frye* test as raising the following three questions:

1) Is there a theory which supports the conclusion that forensic testing of DNA can produce reliable results?
2) Are there generally accepted techniques capable of producing reliable techniques?
3) Were the accepted techniques used in the case at hand?

In light of the expert testimony presented on these three questions, the court answered all three affirmatively. The court went on to note that the C.R.E. 702 standard is more lenient than the *Frye* test. The court found that the DNA evidence helped the jury resolve the identification issue facing it, held that DNA testing is an accepted method of proving identification and deemed the results admissible under C.R.E. 702 as well as *Frye*.

Finally, the appellate court in *Fishback* rejected the defendant's argument that the trial court should have given his proffered jury instruction informing the jury that, when considering the DNA testimony, it could consider the fact that DNA testing is based on new technology. The trial court instead gave the jury the standard instruction pertaining to expert testimony. The Court of Appeals held that this instruction is all that is required.

The Colorado Supreme Court granted *certiorari* in this case on May 11, 1992, and, as of this writing, should be issuing an opinion in the near future. The court's description of the types of evidence to which the *Frye* test applies suggests that the court will use the *Frye* test to analyze DNA evidence.

The DNA issue is complicated by the fact that, while the scientific principles underlying DNA comparisons are well accepted, the procedures used to make the actual comparisons and the statistical studies purporting to justify many of the conclusions reached from such comparisons are still in their infancy. It is possible that one portion of the DNA analysis process will pass muster but that another will not. Other jurisdictions are split on the admissibility of DNA comparisons.

Future of the *Frye* Test

The U.S. Supreme Court recently granted *certiorari* in a case with potentially far-reaching implications for the *Frye* test. That case, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,[25] arose out of the use of the anti-nausea drug Bendectin by pregnant women. Certain offspring of these women who suffered from birth defects sued Merrell Dow, claiming that Bendectin caused the defects. The plaintiffs relied on certain unpublished studies and on unpublished re-analysis of certain epidemiological studies.

The trial court granted Merrell Dow's motion for summary judgment. The Eighth Circuit Court of Appeals affirmed.[26] Both courts held that unpublished studies, which had never been subjected to the peer review process associated with publication, could not form the basis for expert testimony. Without such expert testimony, the plaintiffs' case failed.

The U.S. Supreme Court granted *certiorari* in *Daubert* on three issues:

1) Do the Federal Rules of Evidence ("F.R.E.") eliminate the "general acceptance" test of *Frye*?
2) Do federal courts possess inherent power to create rules for excluding evidence which exceed the requirements of F.R.E. 702, bypass the traditional evidence rule-making process and affect substantive state tort law?
3) May courts constitutionally delegate control over the admission of expert testimony by establishing the editors of peer review journals

as the "recognized authorities" who must approve a particular scientific process or procedure?

Obviously, the answers to these questions may significantly affect the introduction of scientific evidence in federal court. To the extent state courts follow the lead of the federal courts, the impact could affect decisions in state courts as well.

Miscellaneous Issues

The use of experts and scientific testimony is still circumscribed by the relevancy requirement of C.R.E. 403. The *Campbell*[27] decision contained a reminder that the C.R.E. 702 test of admissibility also requires the trial court to engage in a C.R.E. 403 analysis. That is, the trial court also should consider whether the relevance of the evidence

> is substantially outweighed by the danger of unfair prejudice, confusion of the issues or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.[28]

Defense counsel who are facing an expert from a state criminalistics laboratory should remember that the prosecution can introduce reports generated by such experts without live testimony from the expert. In *People v. Mayfield-Ulloa*,[29] the Court of Appeals affirmed the defendant's conviction for cocaine possession against a claim that the trial court improperly admitted lab results without a live foundational witness. CRS § 16-3-309 (5) provides for the admission of criminalistics reports without a live witness, stating that a party wishing to adduce live testimony concerning such reports must notify the witness and the opposing party at least ten days before trial.

Appellate Review

It is important that counsel in state trial courts persuade those courts to permit the introduction of expert testimony. Counsel should not rely on reversals in the appellate courts because appellate courts will give trial court decisions a great deal of deference. Appellate courts will not reverse a trial court decision unless it is manifestly erroneous.[30]

The federal standard of appellate review appears to be significantly different. Federal appellate courts have taken the position that a *de novo* review of a decision concerning the introduction of expert testimony is appropriate because the answer to questions of reliability does not vary from case to case.[31] Because the reliability of a certain process or procedure does not vary in different factual contexts, the trial court has no special insight as to the admissibility of the evidence. Therefore, the evidence may be considered *de novo* by an appellate court.

Conclusion

It should be kept in mind that the relaxed test of C.R.E. 702 works both ways: "What's sauce for the goose is sauce for the gander." Both prosecutors and defense lawyers should be able to use C.R.E. 702 to broaden the scope of admissible scientific evidence. While prosecutors tend to use such evidence more often than defense counsel, many of the cases discussed are ones in which defense counsel tried to introduce the scientific evidence. Effective prosecution and defense both require the use of scientific evidence.

NOTES

1. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).
2. *Id.* at 1014.
3. 746 P.2d 947 (Colo. 1987).
4. *Id.* at 950.
5. 829 P.2d 1314 (Colo. 1992).
6. *People v. Fasy*, 813 P.2d 797 (Colo.App. 1991).
7. *See People v. Koon*, 713 P.2d 410 (Colo. App. 1985).
8. *Fasy, supra*, note 5 at 1316, *quoting People v. Williams*, 790 P.2d 796, 798 (Colo. 1990).
9. *Supra*, note 3.
10. 814 P.2d 1 (Colo. 1991).
11. *Id.* at 8.
12. *People v. Campbell*, 22 Colo. Law. 000 (Feb. 1993) (App. No. 91CA1618, *ann'd* 12/17/92).
13. 753 F.2d 1224 (3rd Cir. 1984).
14. 825 P.2d 1004 (Colo.App. 1991).
15. 827 P.2d 495 (Colo. 1992).
16. *People v. Lanari*, 811 P.2d 399 (Colo. App. 1989).
17. See *Ferrin v. People*, 422 P.2d 108 (Colo. 1967).
18. *People v. Anderson*, 637 P.2d 354 (Colo. 1981).
19. 837 P.2d 239 (Colo.App. 1992).
20. *See State v. Washington*, 622 P.2d 986 (Kan. 1981); *Commonwealth v. Gomes*, 526 N.E.2d 1270 (Mass. 1988); *State v. Foote*, 791 S.W.2d 879 (Mo.App. 1990); *Santillanes v. State*, 765 P.2d 1147 (Nev. 1988); *Plunkett v. State*, 719 P.2d 834 (Okla. Cir. 1986).
21. 804 P.2d 203 (Colo.App. 1990).
22. *Supra*, note 3.
23. 748 P.2d 1237 (Colo.App. 1988).
24. 829 P.2d 489 (Colo.App. 1991), *cert. granted*, May 11, 1992.
25. 113 S.Ct. 320 (1992).
26. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (8th Cir. 1991).
27. *Supra*, note 10.
28. *Id.*
29. 817 P.2d 603 (Colo.App. 1991).
30. *Supra*, note 10.
31. *Daubert, supra*, note 26, *cert. granted on other issues, supra*, note 25; *United States v. Williams*, 583 F.2d 1194 (2d Cir. 1978).

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"Amnesty Day For *Colorado Lawyers*," sponsored by the Denver Bar Association ("DBA") Committee for the Environment and by the Rocky Mountain Recyclers Association in November, gave attorneys the opportunity to trade or recycle their unwanted issues of *The Colorado Lawyer*. The great success of the project has convinced the Committee to continue playing matchmaker for those wanting to trade their journals, at least for the immediate future.

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