

Part I

ORIENTATION: SCOPE AND DEFINITION OF THE FIELD

Chapter 1
Forensic Science in an Adversarial System

§ 1.1 The Forensic Sciences

John I. Thornton

Uses and Abuses of Forensic Science*

69 American Bar Association Journal 288, 289-90 (1983)

In the broadest sense, forensic science is any science used in the resolution of legal conflicts. The word “forensic” comes from the Latin *forensus*, meaning “of the forum.” The ancient Roman forum was the site of debates concerning governmental issues, but it also was the courthouse, where trials were held. Consequently, forensic science has come to mean the study and practice of applying natural and physical sciences to the just resolution of social and legal issues. What distinguishes it from other sciences is its use by the legal system; what distinguishes a forensic scientist from other scientists is the expectation of routine appearances in a court of law. . . .

Although forensic science historically has been identified closely with the criminal justice system, the forensic scientist now plays an increasingly active role in civil litigation and in regulatory matters. Virtually no limitation exists to the scope of physical evidence that is grist for all forensic scientists. Physical evidence may range in size from the microscopic (for example, a pollen grain) to the macroscopic (for example, a diesel truck). It may be as appalling as the lifeless body of a battered child, as intangible as the fleeting vapors of gasoline following a suspected arson fire, or as obscure as the composition of dyes in the ink of a contested will. . . .

A number of disciplines exist within the rubric of forensic science. Many of these are simply adaptations of existing disciplines — for example, forensic pathology as a specialty of pathology — although at least one subdiscipline

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— criminalistics — is a novel synthesis of natural and physical sciences. Its origins cannot be attributed to any single parent discipline. The American Academy of Forensic Sciences, the largest professional forensic society in the world, recognizes the following scientific disciplines: forensic pathology, forensic toxicology, forensic anthropology, forensic odontology, forensic psychiatry, questioned documents, forensic engineering, and criminalistics. . . .

NOTES

1. *Definitions and lists.* Thornton's list of forensic sciences is not exhaustive of all medicine and science as it appears in the courtroom. For example, orthopedic surgeons probably prepare more medico-legal reports and appear as witnesses in courts and before administrative agencies, such as Workers' Compensation Boards, more frequently than most of the specialists named as forensic scientists. Economists testify in antitrust, personal injury, and employment discrimination cases. Experimental psychologists who study the factors influencing the accuracy of eyewitnesses describe their general findings in criminal cases. Toxicologists and epidemiologists testify in "toxic tort" cases about the causes of diseases and medical conditions. In other product liability cases engineers opine about design and safety. Statisticians act as consultants and witnesses in a broad spectrum of cases.

Nevertheless, the scientists in the disciplines enumerated by the American and British Academies of Forensic Science tend to share certain distinctive professional attitudes and goals. They think of themselves not just as scientists who sometimes have information to contribute in court, but as scientists whose work always is connected with the legal system. They strive to make their disciplines more useful and more relevant to the administration of justice. In Thornton's words, "[a]ll of these disciplines have a unifying theme — the introduction of science into the legal process in an objective and impartial manner . . ." John I. Thornton, *Uses and Abuses of Forensic Science*, 69 A.B.A.J. 288, 291 (1983). Thus, one forensic laboratory's director observes that "[w]e see ourselves as different from most of the others in

our circle of professional colleagues. That circle is populated by lawyers, police, administrators, an occasional pathologist, and once in a while, the press. For the most part, our nonscience peers do not speak our language and are often apathetic about our concerns.” Barry A.J. Fisher, *Developing a Forensic Science Laboratory Operating Strategy*, 31 *J. Forensic Sci.* 1177, 1178-79 (1986).

While marked with a distinctive professional identity, the self-designated forensic sciences, as indicated in Fisher’s remarks, commonly are part of the law enforcement apparatus. Most practitioners apply their talents in criminal investigation and in aid of police agencies and public prosecutors. This is especially true of criminalists:

Criminalistics may be described in either a subtractive or an additive manner. In the former sense, it represents what remains other than pathology, odontology, toxicology, and the other forensic subspecialties. In the additive sense, criminalistics is concerned with the analysis, identification, and interpretation of hairs and fibers; bloodstains and seminal stains; firearms evidence; soil, glass and paint classifications; toolmarks; arson accelerants; explosives; serial number restoration; and virtually everything else that does not fit tidily into one of the other disciplines.

John I. Thornton, *Uses and Abuses of Forensic Science*, 69 *A.B.A.J.* 288, 290-91 (1983).

This book is concerned broadly with the use of scientific knowledge in adjudication and legislation. Nevertheless, it does not attempt to cover every kind of scientific testimony. Though it is primarily concerned with forensic science, it does not cover any specific area exhaustively. The objective is to convey a flavor of and an appreciation for the way in which law, medicine, and science interact in and on the way to the courtroom.

2. *History.* Forensic medicine is by no means a 20th-century innovation. In China, the elements of toxicology were recognized long ago, and the *Materia Medica* of 3000 B.C. included information on aconite, arsenic and opium. Hsi Yuan Lu (*Instructions to Coroners*) dealt with practically every topic in forensic medicine. This classic text first appeared in 1250 A.D. and was amended and reprinted up to the 19th century. M.S. Salgado, *Forensic Medicine in the*

Indo-Pacific Region: History and Current Practice of Forensic Medicine, 36 *Forensic Sci. Int'l* 3, 3 (1988).

Medical testimony in English criminal cases extends back into the Middle Ages, but:

News of important advances in Italy, Germany, France and other countries crossed the Channel only, it seems, very slowly. Pathology, a sister science, did not even begin to bloom in Britain until the late 1700s For far too long the average expert medical witness in an English courtroom or inquest chamber was a busy surgeon, obliged to mount the witness box only a few times at most in his career and ill prepared for the experience. Unless he understood a foreign language, Continental lectures, books, and papers were beyond his reach. His medical education scarcely touched on the functions and duties of the expert witness, and the critical importance of useful medical testimony often escaped him – as it did the jurist and indeed the general public. When medical men did appear in court, it was to confirm the fact and more obvious circumstances of death. Very few of these witnesses understood how to search for evidence at the scene of the crime and at the autopsy table, how to record it accurately, and how to present it clearly and without equivocation. But as the eighteenth century drew to a close, concern grew within and without the medical profession that a doctor's training should include at least the fundamentals of forensic medicine Books and papers began to appear on the subject, a few universities experimented with lectures on the new specialty, and legislation recognizing the importance of the forensic expert and facilitating his work was debated.

Thomas Forbes, *Surgeons at the Bailey: English Forensic Medicine to 1878*, 3 (1985).

As regards the other subfields of forensic science, however:

Forensic science is essentially a 20th century innovation. Various attempts were made earlier to use scientific evidence of one sort or another, but the results were less than satisfactory. By 1915 only three New England states and the city of New York had replaced their coroner systems with a more progressive medical examiner system. The first operational crime laboratory in the country was not established until 1923 in Los Angeles, followed by the Scientific Crime Detection Laboratory at Northwestern University in 1929, and the Federal Bureau of Investigation laboratory in 1932. Despite what one might infer from Arthur Conan Doyle's writings, England did not create a forensic laboratory until 1935. . . .

Although one might suppose that the inception of forensic science resulted from progressive attitudes of pathologists,

lawyers, police administrators, or scientists, this rarely was the case. Neither physicians nor attorneys led the reform movement that resulted in the establishment of a medical examiner's office for the city of New York. Similarly, public outrage after the 1929 Valentine's Day massacre in Chicago provided the impetus for establishing that city's scientific crime detection laboratory. In fact, many of the nation's crime laboratories owe their existence not to enlightened attitudes of police administrators or other public officials but to adverse publicity or the threat of it. . . .

John I. Thornton, *Uses and Abuses of Forensic Science*, 69 A.B.A.J. 288, 291 (1983).

3. *References.* General works on forensic science by or with contributions from forensic scientists themselves include Max M. Houck & Jay Siegel, *Fundamentals of Forensic Science* (2006); 1-4 *Encyclopedia of Forensic and Legal Medicine* (Jason Payne-Hames et al. 2005); 1-2 *Forensic Science Handbook* (Richard Saferstein ed., 2d ed. 2002, 2004); Richard Saferstein, *Criminalistics: An Introduction to Forensic Science* (8th ed. 2004); 1-3 *Encyclopedia of Forensic Sciences* (Jay A. Siegel et al. eds., 2000). Leading texts by attorneys include Paul Giannelli & Edward Imwinkelried, *Scientific Evidence* (3d ed. 1999), Andre A. Moenssens et al., *Scientific Evidence in Civil and Criminal Cases* (4th ed. 1995), and 1 McCormick on Evidence §§ 203-211 (Ken Broun ed., 6th ed. 2006). Books by attorneys that include reviews of scientific research by scientists include 1-4 *Modern Scientific Evidence: The Law and Science of Expert Testimony* (David Faigman et al. eds., 3d rev. ed. 2006), and the *Reference Manual on Scientific Evidence* (Federal Judicial Center ed., 2d ed. 2000). As with most scientific fields, advances and changes are frequent; papers in professional journals typically must be consulted.

§ 1.2 The Power of Forensic Science Evidence

Holmes v. South Carolina

126 S.Ct. 1727 (2006)

JUSTICE ALITO delivered the opinion of the Court.

This case presents the question whether a criminal defendant's federal constitutional rights are violated by an evidence rule under which the defendant may not introduce proof of third-party guilt if the prosecution has introduced forensic evidence that, if believed, strongly supports a guilty verdict.

I

On the morning of December 31, 1989, 86-year-old Mary Stewart was beaten, raped, and robbed in her home. She later died of complications stemming from her injuries. Petitioner was convicted by a South Carolina jury of murder, first-degree criminal sexual conduct, first-degree burglary, and robbery, and he was sentenced to death. The South Carolina Supreme Court affirmed his convictions and sentence, and this Court denied certiorari. Upon state postconviction review, however, petitioner was granted a new trial.

At the second trial, the prosecution relied heavily on the following forensic evidence:

“(1) [Petitioner's] palm print was found just above the door knob on the interior side of the front door of the victim's house; (2) fibers consistent with a black sweatshirt owned by [petitioner] were found on the victim's bed sheets; (3) matching blue fibers were found on the victim's pink nightgown and on [petitioner's] blue jeans; (4) microscopically consistent fibers were found on the pink nightgown and on [petitioner's] underwear; (5) [petitioner's] underwear contained a mixture of DNA from two individuals, and 99.99% of the population other than [petitioner] and the victim were excluded as

contributors to that mixture; and (6) [petitioner's] tank top was found to contain a mixture of [petitioner's] blood and the victim's blood.”

In addition, the prosecution introduced evidence that petitioner had been seen near Stewart's home within an hour of the time when, according to the prosecution's evidence, the attack took place.

As a major part of his defense, petitioner attempted to undermine the State's forensic evidence by suggesting that it had been contaminated and that certain law enforcement officers had engaged in a plot to frame him. Petitioner's expert witnesses criticized the procedures used by the police in handling the fiber and DNA evidence and in collecting the fingerprint evidence. Another defense expert provided testimony that petitioner cited as supporting his claim that the palm print had been planted by the police.

Petitioner also sought to introduce proof that another man, Jimmy McCaw White, had attacked Stewart. At a pretrial hearing, petitioner proffered several witnesses who placed White in the victim's neighborhood on the morning of the assault, as well as four other witnesses who testified that White had either acknowledged that petitioner was “innocent” or had actually admitted to committing the crimes. One witness recounted that when he asked White about the “word . . . on the street” that White was responsible for Stewart's murder, White “put his head down and he raised his head back up and he said, well, you know I like older women.” According to this witness, White added that “he did what they say he did” and that he had “no regrets about it at all.” Another witness, who had been incarcerated with White, testified that White had admitted to assaulting Stewart, that a police officer had asked the witness to testify falsely against petitioner, and that employees of the prosecutor's office, while soliciting the witness' cooperation, had spoken of manufacturing evidence against petitioner. White testified at the pretrial hearing and denied making the incriminating statements. He also provided an alibi for the time of the crime, but another witness refuted his alibi.

The trial court excluded petitioner's third-party guilt evidence citing *State v. Gregory*, 198 S.C. 98, 16 S.E.2d 532 (1941), which held that such evidence is admissible if it “

‘raise[s] a reasonable inference or presumption as to [the defendant’s] own innocence’ ” but is not admissible if it merely “‘cast[s] a bare suspicion upon another” or “‘raise[s] a conjectural inference as to the commission of the crime by another.”” On appeal, the South Carolina Supreme Court found no error in the exclusion of petitioner’s third-party guilt evidence. [T]he State Supreme Court held that “where there is strong evidence of an appellant’s guilt, especially where there is strong forensic evidence, the proffered evidence about a third party’s alleged guilt does not raise a reasonable inference as to the appellant’s own innocence.” Applying this standard, the court held that petitioner could not “overcome the forensic evidence against him to raise a reasonable inference of his own innocence.” We granted certiorari.

II

“[S]tate and federal rulemakers have broad latitude under the Constitution to establish rules excluding evidence from criminal trials.” *United States v. Scheffer*, 523 U.S. 303, 308 (1998). This latitude, however, has limits. “Whether rooted directly in the Due Process Clause of the Fourteenth Amendment or in the Compulsory Process or Confrontation clauses of the Sixth Amendment, the Constitution guarantees criminal defendants ‘a meaningful opportunity to present a complete defense.’ ” *Crane*, *supra*, at 690 (quoting *California v. Trombetta*, 467 U.S. 479, 485 (1984); citations omitted). This right is abridged by evidence rules that “infring[e] upon a weighty interest of the accused” and are “ ‘arbitrary’ or ‘disproportionate to the purposes they are designed to serve.’ ” *Scheffer*, *supra*, at 308 (quoting *Rock v. Arkansas*, 483 U.S. 44, 58, 56 (1987)).

This Court’s cases contain several illustrations of “arbitrary” rules, i.e., rules that excluded important defense evidence but that did not serve any legitimate interests. . . .

In *Rock v. Arkansas*, *supra*, this Court held that a rule prohibiting hypnotically refreshed testimony was unconstitutional because “[w]holesale inadmissibility of a defendant’s testimony is an arbitrary restriction on the right to testify in the absence of clear evidence by the State repudiating the validity of all post-hypnotic recollections.” *Id.*, at

61. By contrast, in *United States v. Scheffer, supra*, we held that a rule excluding all polygraph evidence did not abridge the right to present a defense because the rule “serve[d] several legitimate interests in the criminal trial process,” was “neither arbitrary nor disproportionate in promoting these ends,” and did not “implicate a sufficiently weighty interest of the defendant.” *Id.*, at 309.

While the Constitution thus prohibits the exclusion of defense evidence under rules that serve no legitimate purpose or that are disproportionate to the ends that they are asserted to promote, well-established rules of evidence permit trial judges to exclude evidence if its probative value is outweighed by certain other factors such as unfair prejudice, confusion of the issues, or potential to mislead the jury. Plainly referring to rules of this type, we have stated that the Constitution permits judges “to exclude evidence that is ‘repetitive . . . , only marginally relevant’ or poses an undue risk of ‘harassment, prejudice, [or] confusion of the issues.’” *Crane, supra*, at 689-690 (quoting *Delaware v. Van Arsdall*, 475 U.S. 673, 679 (1986); ellipsis and brackets in original).

A specific application of this principle is found in rules regulating the admission of evidence proffered by criminal defendants to show that someone else committed the crime with which they are charged. See, e.g., 41 C.J.S., Homicide § 216, pp. 56-58 (1991) (“Evidence tending to show the commission by another person of the crime charged may be introduced by accused when it is inconsistent with, and raises a reasonable doubt of, his own guilt; but frequently matters offered in evidence for this purpose are so remote and lack such connection with the crime that they are excluded”); 40A Am.Jur.2d, Homicide § 286, pp. 136-138 (1999) (“[T]he accused may introduce any legal evidence tending to prove that another person may have committed the crime with which the defendant is charged [Such evidence] may be excluded where it does not sufficiently connect the other person to the crime, as, for example, where the evidence is speculative or remote, or does not tend to prove or disprove a material fact in issue at the defendant's trial” (footnotes omitted)). Such rules are widely accepted, and neither petitioner nor his amici challenge them here.

In . . . this case, however, the South Carolina Supreme Court radically changed and extended the rule. [It] applied the rule that “where there is strong evidence of [a defendant's] guilt, especially where there is strong forensic evidence, the proffered evidence about a third party's alleged guilt” may (or perhaps must) be excluded. 361 S.C., at 342, 605 S.E.2d, at 24.

Under this rule, the trial judge does not focus on the probative value or the potential adverse effects of admitting the defense evidence of third-party guilt. Instead, the critical inquiry concerns the strength of the prosecution's case: If the prosecution's case is strong enough, the evidence of third-party guilt is excluded even if that evidence, if viewed independently, would have great probative value and even if it would not pose an undue risk of harassment, prejudice, or confusion of the issues.

Furthermore, as applied in this case, the South Carolina Supreme Court's rule seems to call for little, if any, examination of the credibility of the prosecution's witnesses or the reliability of its evidence. Here, for example, the defense strenuously claimed that the prosecution's forensic evidence was so unreliable (due to mishandling and a deliberate plot to frame petitioner) that the evidence should not have even been admitted. The South Carolina Supreme Court responded that these challenges did not entirely “eviscerate” the forensic evidence and that the defense challenges went to the weight and not to the admissibility of that evidence. Yet, in evaluating the prosecution's forensic evidence and deeming it to be “strong”— and thereby justifying exclusion of petitioner's third-party guilt evidence — the South Carolina Supreme Court made no mention of the defense challenges to the prosecution's evidence.

Interpreted in this way, the rule applied by the State Supreme Court does not rationally serve the end that the *Gregory* rule and its analogues in other jurisdictions were designed to promote, i.e., to focus the trial on the central issues by excluding evidence that has only a very weak logical connection to the central issues. The rule applied in this case appears to be based on the following logic: Where (1) it is clear that only one person was involved in the commission of a particular crime and (2) there is strong

evidence that the defendant was the perpetrator, it follows that evidence of third-party guilt must be weak. But this logic depends on an accurate evaluation of the prosecution's proof, and the true strength of the prosecution's proof cannot be assessed without considering challenges to the reliability of the prosecution's evidence. Just because the prosecution's evidence, if credited, would provide strong support for a guilty verdict, it does not follow that evidence of third-party guilt has only a weak logical connection to the central issues in the case. And where the credibility of the prosecution's witnesses or the reliability of its evidence is not conceded, the strength of the prosecution's case cannot be assessed without making the sort of factual findings that have traditionally been reserved for the trier of fact and that the South Carolina courts did not purport to make in this case.

The rule applied in this case is no more logical than its converse would be, i.e., a rule barring the prosecution from introducing evidence of a defendant's guilt if the defendant is able to proffer, at a pretrial hearing, evidence that, if believed, strongly supports a verdict of not guilty. In the present case, for example, the petitioner proffered evidence that, if believed, squarely proved that White, not petitioner, was the perpetrator. It would make no sense, however, to hold that this proffer precluded the prosecution from introducing its evidence, including the forensic evidence that, if credited, provided strong proof of the petitioner's guilt.

The point is that, by evaluating the strength of only one party's evidence, no logical conclusion can be reached regarding the strength of contrary evidence offered by the other side to rebut or cast doubt. Because the rule applied by the State Supreme Court in this case did not heed this point, the rule is "arbitrary" in the sense that it does not rationally serve the end that the *Gregory* rule and other similar third-party guilt rules were designed to further. Nor has the State identified any other legitimate end that the rule serves. It follows that the rule applied in this case by the State Supreme Court violates a criminal defendant's right to have "a meaningful opportunity to present a complete defense." *Crane*, 476 U.S., at 690 (quoting *Trombeta*, 467 U.S., at 485).

III

For these reasons, we vacate the judgment of the South Carolina Supreme Court and remand the case for further proceedings not inconsistent with this opinion.

It is so ordered.

NOTES

1. *The challenge to the state's "forensic evidence."* What was the "forensic evidence" against Holmes? Why, according to Holmes, was it not compelling? Suppose that Holmes had not directly questioned the "forensic evidence"? Would the United States Supreme Court still have reversed the South Carolina Supreme Court?

2. *The importance of scientific evidence.* That the state courts gave the scientific evidence in *Holmes* preclusive effect reveals that this evidence was quite persuasive to the judges. Many prosecutors believe that juries have come to expect such evidence. As a result, they engage in the analog of "defensive medicine" — they take pains to have forensic tests performed or to explain their absence. See, e.g., Max M. Houck, *CSI: The Reality*, *Sci. Am.*, July 2006, at 85-89.

§ 1.3 Responsibilities of Experts and Lawyers

Miller v. Pate

386 U.S. 1 (1967)

MR. JUSTICE STEWART delivered the opinion of the Court.

On November 26, 1955, in Canton, Illinois, an eight-year-old girl died as the result of a brutal sexual attack. The petitioner was charged with her murder. Prior to his trial in an Illinois court, his counsel filed a motion for an order permitting a scientific inspection of the physical evidence the prosecution intended to introduce. The motion was resisted by the prosecution and denied by the court. The jury trial ended in a verdict of guilty and a sentence of

death. On appeal the judgment was affirmed by the Supreme Court of Illinois. On the basis of leads developed at a subsequent unsuccessful state clemency hearing, the petitioner applied to a federal district court for a writ of habeas corpus. After a hearing, the court granted the writ and ordered the petitioner's release or prompt retrial. The Court of Appeals reversed, and we granted certiorari to consider whether the trial that led to the petitioner's conviction was constitutionally valid. We have concluded that it was not.

There were no eyewitnesses to the brutal crime which the petitioner was charged with perpetrating. A vital component of the case against him was a pair of men's underwear shorts covered with large, dark, reddish-brown stains — People's Exhibit 3 in the trial record. These shorts had been found by a Canton policeman in a place known as the Van Buren Flats three days after the murder. The Van Buren Flats were about a mile from the scene of the crime. It was the prosecution's theory that the petitioner had been wearing these shorts when he committed the murder, and that he had afterwards removed and discarded them at the Van Buren Flats.

During the presentation of the prosecution's case, People's Exhibit 3 was variously described by witnesses in such terms as the "bloody shorts" and "a pair of jockey shorts stained with blood." Early in the trial the victim's mother testified that her daughter "had type 'A' positive blood." Evidence was later introduced to show that the petitioner's blood "was of group 'O'."

Against this background the jury heard the testimony of a chemist for the State Bureau of Crime Identification. The prosecution established his qualifications as an expert, whose "duties include blood identification, grouping and typing both dry and fresh stains," and who had "made approximately one thousand blood typing analyses while at the State Bureau." His crucial testimony was as follows:

I examined and tested "People's Exhibit 3" to determine the nature of the staining material upon it. The result of the first test was that this material upon the shorts is blood. I made a second examination which disclosed that the blood is of human origin. I made a further examination which disclosed that the blood is of group 'A'.

The petitioner, testifying in his own behalf, denied that he had ever owned or worn the shorts in evidence as People's Exhibit 3. He himself referred to the shorts as having "dried blood on them."

In argument to the jury the prosecutor made the most of People's Exhibit 3:

Those shorts were found in the Van Buren Flats, with blood. What type blood? Not 'O' blood as the defendant has, but "A" — type "A."

And later in his argument he said to the jury:

And, if you will recall, it has never been contradicted the blood type of Janice May was blood type "A" positive. Blood type "A". Blood type "A" on these shorts. It wasn't "O" type as the defendant has. It is "A" type, what the little girl had.

Such was the state of the evidence with respect to People's Exhibit 3 as the case went to the jury. And such was the state of the record as the judgment of conviction was reviewed by the Supreme Court of Illinois. The "blood stained shorts" clearly played a vital part in the case for the prosecution. They were an important link in the chain of circumstantial evidence against the petitioner, and, in the context of the revolting crime with which he was charged, their gruesomely emotional impact upon the jury was incalculable.

So matters stood with respect to People's Exhibit 3, until the present habeas corpus proceeding in the Federal District Court. In this proceeding the State was ordered to produce the stained shorts, and they were admitted in evidence. It was established that their appearance was the same as when they had been introduced at the trial as People's Exhibit 3. The petitioner was permitted to have the shorts examined by a chemical microanalyst. What the microanalyst found cast an extraordinary new light on People's Exhibit 3. The reddish-brown stains on the shorts were not blood, but paint.

The witness said that he had tested threads from each of the 10 reddish-brown stained areas on the shorts, and that he had found that all of them were encrusted with mineral pigments ". . . which one commonly uses in the

preparation of paints.” He found “no traces of human blood.” The State did not dispute this testimony, its counsel contenting himself with prevailing upon the witness to concede on cross-examination that he could not swear that there had never been any blood on the shorts.

It was further established that counsel for the prosecution had known at the time of the trial that the shorts were stained with paint. The prosecutor even admitted that the Canton police had prepared a memorandum attempting to explain “how this exhibit contains all the paint on it.”

In argument at the close of the habeas corpus hearing counsel for the State contended that “[e]verybody” at the trial had known that the shorts were stained with paint. That contention is totally belied by the record. The microanalyst correctly described the appearance of the shorts when he said, “I assumed I was dealing . . . with a pair of shorts which was heavily stained with blood. . . . [I]t would appear to a layman . . . that what I see before me is a garment heavily stained with blood.” The record of the petitioner’s trial reflects the prosecution’s consistent and repeated misrepresentation that People’s Exhibit 3 was, indeed, “a garment heavily stained with blood.” The prosecution’s whole theory with respect to the exhibit depended upon that misrepresentation. For the theory was that the victim’s assailant had discarded the shorts because they were stained with blood. A pair of paint-stained shorts, found in an abandoned building a mile away from the scene of the crime, was virtually valueless as evidence against the petitioner. The prosecution deliberately misrepresented the truth.

More than 30 years ago this Court held that the Fourteenth Amendment cannot tolerate a state criminal conviction obtained by the knowing use of false evidence. There has been no deviation from that established principle. There can be no retreat from that principle here.

The judgment of the Court of Appeals is reversed and the case is remanded for further proceedings consistent with this opinion. It is so ordered.

NOTES

1. *The Court's holding.* What did the Supreme Court hold in *Miller*? What should it have held? That the failure to give the defense access to the shorts before trial violated the defendant's right to due process of law? That the chemist's testimony at the state trial was false and therefore a violation of due process? That the prosecutor presented evidence that he knew was false, thereby violating due process? That the prosecutor withheld evidence that he knew would have exculpated the defendant? An investigation by the bar into the prosecutor's conduct found no material misrepresentation. See Report of the Grievance Committee of the Illinois State Bar Association, May 14, 1968, reprinted as *The Vindication of a Prosecutor*, 59 J. Crim. L., Criminology & Police Sci. 335 (1968).

2. *The chemist's testimony.* Did the chemist who testified at the state trial blunder in performing the blood typing tests and incorrectly conclude that red paint was type A blood? Or did the chemist believe that the red stain was partly blood and partly paint? If he blundered, the ability of the police laboratory to provide valid scientific evidence is thrown into doubt, and it is appropriate to ask what rules of law might enhance laboratory performance. If he withheld information from the court, did he act ethically? The problem of maintaining scientific objectivity in the courtroom is discussed below.

3. *The relevance of the shorts.* Was the testimony as to the shorts relevant? How did this evidence make the guilt of the defendant more probable than it was without the evidence?

4. *Laboratory proficiency.* For other instances of "questionable forensic science" exposed by defense experts, see Joseph F. Keefe, *Forensic Science Services and the Criminal Justice System as Viewed by the Defense*, 24 J. Forensic Sci. 673 (1979). Naturally, the quality of laboratories and the technicians and scientists working in them varies. See Nicholas Lappas, *Forensic Science Laboratories*

in the United States: A Survey, 18 *J. Forensic Sci. Soc'y* 171 (1978). A number of proficiency studies, particularly in the area of forensic toxicology, have been undertaken. E.g., M.A. Peat et al., Proficiency Testing in Forensic Toxicology: A Feasibility Study, 28 *J. Forensic Sci.* 139 (1983); E.C. Dinovo & L.A. Gottschalk, Results of a Nine-Laboratory Survey of Forensic Toxicology Proficiency, 22 *Clinical Chemistry* 843 (1976); cf. Lawrence Miike & Maria Hewitt, Accuracy and Reliability of Urine Drug Tests, 36 *Kan. L. Rev.* 641, 656 (1988) (“In a ‘blind study’ of fifty labs nationwide performing drug tests, there was a 35% false negative rate and a one percent false positive rate”). In the mid-1970s the federal Law Enforcement Assistance Administration sent known samples to many participating police laboratories for identification. The percentage of laboratories with “unacceptable” (inaccurate or incomplete) responses ranged from 1.6% (for a blood stained cloth) to 71.2% (for a semen stained cloth), depending on the nature of the sample. Joseph Peterson et al., Crime Laboratory Proficiency Testing Research Program 251 (U.S. Dep’t Justice 1978).

More recent studies are discussed in Joseph L. Peterson & Penelope N. Markham, Crime Laboratory Proficiency Testing Results (pts. 1 & 2), 40 *J. Forensic Sci.* 994 & 1009 (1995). Reviewing the efforts of laboratories to determine if an unknown sample shared a common origin with a known sample (for firearms, toolmarks, hair, footwear, physiological fluids, glass, paint, fibers, latent fingerprints, questioned documents and metals), error rates ranged from a low of 0.5% for latent fingerprint cards to a high of 23% for automotive paint. *Id.* at 1010. Even higher error rates are quoted in Michael J. Saks & Jonathan J. Koehler, The Coming Paradigm Shift in Forensic Identification Science, 309 *Science* 892, 895 (2005), but some of these figures might have less to do with the proficiency of the analysts than the inherent limitations of the technology. For example, microscopic hair comparisons differ from mitochondrial DNA tests in about 12 percent but the cases, but this does not mean that the microscopists are misjudging the features they see under the microscope — only that these characteristics are less discriminating than the DNA sequences.

The sheer number of mistakes or one kind or another in forensic work, however, is not the relevant benchmark in

assessing what forensic science has to offer the legal system. All evidence, from the reports of eyewitnesses to reliance on a person's reputation, is fallible. Is there any reason to think that scientific evidence is any worse than the more familiar modes of proof? Should courts nevertheless screen it more carefully than lay testimony? How? We explore these questions in chapter 6.

Forensic laboratories are exempted from the requirements of the Department of Health and Human Services Comprehensive Clinical Laboratories Improvements Act of 1988. Very few states engage in comprehensive regulation and licensing of public or private laboratories, and calls for improved quality assurance are perennial. See, e.g., National Research Council Committee on DNA Forensic Science: An Update, *The Evaluation of Forensic DNA Evidence* (1996) National Research Council Committee on DNA Technology in Forensic Science, *DNA Technology in Forensic Science* 109 (1992). (recommending “[e]xternal mechanisms” including “mandatory proficiency testing” for laboratories that perform DNA identification); Randolph N. Jonakait, *Forensic Science: The Need for Regulation*, 4 *Harv. J. L. & Tech.* 109 (1991).

5. *The impact of forensic analysis.* *Miller*, like *Holmes*, highlights the powerful effect that scientific evidence can have — for better or worse — in some cases. But how many? Should more resources be invested in the scientific investigation of crime? Or did the unnamed police administrator have a strong point when he asked “Do you know how many patrol cars that gas chromatography system could buy?” Barry A.J. Fisher, *Developing a Forensic Science Laboratory Operating Strategy*, 31 *J. Forensic Sci.* 1177, 1178 (1986). Empirical studies of factors that affect the disposition of cases provide few clear answers. See P.L. Bender et al., *Utilization of Forensic Sciences in Police Investigations: A Review of the Literature* (U.S. Dep’t of Justice 1982); Joseph Peterson et al., *Forensic Evidence and the Police: The Effects of Scientific Evidence on Criminal Investigations* 210 (U.S. Dep’t of Justice 1984) (“The effect of physical evidence on clearance and conviction depends on the type of offense and the jurisdiction involved”); Harry Kalven & Hans Zeisel, *The American Jury* 139 (1966) (no experts

appeared in about three-quarters of criminal trials studied and in only 3% of the trials did both sides employ an expert; prosecutors used experts four times as often as defense attorneys).

Arizona v. Youngblood

488 U.S. 51 (1988)

CHIEF JUSTICE REHNQUIST delivered the opinion of the Court.

Respondent Larry Youngblood was convicted by a Pima County, Arizona jury of child molestation, sexual assault, and kidnapping. The Arizona Court of Appeals reversed his conviction on the ground that the State had failed to preserve semen samples from the victim's body and clothing. We granted certiorari to consider the extent to which the Due Process Clause of the Federal Constitution requires the State to preserve evidentiary material that might be useful to a criminal defendant.

On October 29, 1983, David L., a 10-year-old boy, attended a church service with his mother. After he left the service at about 9:30 p.m., the boy went to a carnival behind the church, where he was abducted by a middle-aged man of medium height and weight. The assailant drove the boy to a secluded area near a ravine and molested him. He then took the boy to an unidentified, sparsely furnished house where he sodomized the boy four times. Afterwards, the assailant tied the boy up while he went outside to start his car. Once the assailant started the car, albeit with some difficulty, he returned to the house and again sodomized the boy. The assailant then sent the boy to the bathroom to wash up before he returned him to the carnival. He threatened to kill the boy if he told anyone about the attack. The entire ordeal lasted about 1 1/2 hours.

After the boy made his way home, his mother took him to Kino Hospital. At the hospital, a physician treated the boy for rectal injuries. The physician also used a "sexual assault kit" to collect evidence of the attack. The Tucson Police Department provided such kits to all hospitals in Pima County for use in sexual assault cases. Under standard procedure, the victim of a sexual assault was taken to

a hospital, where a physician used the kit to collect evidence. The kit included paper to collect saliva samples, a tube for obtaining a blood sample, microscopic slides for making smears, a set of Q-tip like swabs, and a medical examination report. Here, the physician used the swab to collect samples from the boy's rectum and mouth. He then made a microscopic slide of the samples. The doctor also obtained samples of the boy's saliva, blood, and hair. The physician did not examine the samples at any time. The police placed the kit in a secure refrigerator at the police station. At the hospital, the police also collected the boy's underwear and T-shirt. This clothing was not refrigerated or frozen.

Nine days after the attack, on November 7, 1983, the police asked the boy to pick out his assailant from a photographic lineup. The boy identified respondent as the assailant. Respondent was not located by the police until four weeks later; he was arrested on December 9, 1983.

On November 8, 1983, Edward Heller, a police criminologist, examined the sexual assault kit. He testified that he followed standard department procedure, which was to examine the slides and determine whether sexual contact had occurred. After he determined that such contact had occurred, the criminologist did not perform any other tests, although he placed the assault kit back in the refrigerator. He testified that tests to identify blood group substances were not routinely conducted during the initial examination of an assault kit and in only about half of all cases in any event. He did not test the clothing at this time.

Respondent was indicted on charges of child molestation, sexual assault, and kidnaping. The State moved to compel respondent to provide blood and saliva samples for comparison with the material gathered through the use of the sexual assault kit, but the trial court denied the motion on the ground that the State had not obtained a sufficiently large semen sample to make a valid comparison. The prosecutor then asked the State's criminologist to perform an ABO blood group test on the rectal swab sample in an attempt to ascertain the blood type of the boy's assailant. This test failed to detect any blood group substances in the sample.

In January 1985, the police criminologist examined the boy's clothing for the first time. He found one semen stain on the boy's underwear and another on the rear of his T-shirt. The criminologist tried to obtain blood group substances from both stains using the ABO technique, but was unsuccessful. He also performed a P-30 protein molecule test on the stains, which indicated that only a small quantity of semen was present on the clothing; it was inconclusive as to the assailant's identity. The Tucson Police Department had just begun using this test, which was then used in slightly more than half of the crime laboratories in the country.

Respondent's principal defense at trial was that the boy had erred in identifying him as the perpetrator of the crime. In this connection, both a criminologist for the State and an expert witness for respondent testified as to what might have been shown by tests performed on the samples shortly after they were gathered, or by later tests performed on the samples from the boy's clothing had the clothing been properly refrigerated. The court instructed the jury that if they found the State had destroyed or lost evidence, they might "infer that the true fact is against the State's interest."

The jury found respondent guilty as charged, but the Arizona Court of Appeals reversed the judgment of conviction. It stated that "when identity is an issue at trial and the police permit the destruction of evidence that could eliminate the defendant as the perpetrator, such loss is material to the defense and is a denial of due process." The Court of Appeals concluded on the basis of the expert testimony at trial that timely performance of tests with properly preserved semen samples could have produced results that might have completely exonerated respondent. The Court of Appeals reached this conclusion even though it did "not imply any bad faith on the part of the State." The Supreme Court of Arizona denied the State's petition for review, and we granted certiorari. We now reverse.

Decision of this case requires us to again consider "what might loosely be called the area of constitutionally-guaranteed access to evidence." *United States v. Valenzuela-Bernal*, 458 U.S. 858, 867 (1982). In *Brady v. Mary-*

land, 373 U.S. 83 (1963), we held "that the suppression by the prosecution of evidence favorable to the accused upon request violates due process where the evidence is material either to guilt or to punishment, irrespective of the good faith or bad faith of the prosecution." In *United States v. Agurs*, 427 U.S. 97 (1976), we held that the prosecution had a duty to disclose some evidence of this description even though no requests were made for it, but at the same time we rejected the notion that a "prosecutor has a constitutional duty routinely to deliver his entire file to defense counsel."

There is no question but that the State complied with *Brady* and *Agurs* here. The State disclosed relevant police reports to respondent, which contained information about the existence of the swab and the clothing, and the boy's examination at the hospital. The State provided respondent's expert with the laboratory reports and notes prepared by the police criminologist, and respondent's expert had access to the swab and to the clothing.

If respondent is to prevail on federal constitutional grounds, then, it must be because of some constitutional duty over and above that imposed by cases such as *Brady* and *Agurs*. Our most recent decision in this area of the law, *California v. Trombetta*, 467 U.S. 479 (1984), arose out of a drunk driving prosecution in which the State had introduced test results indicating the concentration of alcohol in the blood of two motorists. The defendants sought to suppress the test results on the ground that the State had failed to preserve the breath samples used in the test. We rejected this argument for several reasons: first, "the officers here were acting in 'good faith and in accord with their normal practice,'""; second, in the light of the procedures actually used the chances that preserved samples would have exculpated the defendants were slim, and, third, even if the samples might have shown inaccuracy in the tests, the defendants had "alternative means of demonstrating their innocence." In the present case, the likelihood that the preserved materials would have enabled the defendant to exonerate himself appears to be greater than it was in *Trombetta*, but here, unlike in *Trombetta*, the State did not

attempt to make any use of the materials in its own case in chief.

Our decisions in related areas have stressed the importance for constitutional purposes of good or bad faith on the part of the Government when the claim is based on loss of evidence attributable to the Government. In *United States v. Marion*, 404 U.S. 307 (1971), we said that “[n]o actual prejudice to the conduct of the defense is alleged or proved, and there is no showing that the Government intentionally delayed to gain some tactical advantage over appellees or to harass them.” Similarly, in *United States v. Valenzuela-Bernal*, supra, we considered whether the Government's deportation of two witnesses who were illegal aliens violated due process. We held that the prompt deportation of the witnesses was justified “upon the Executive's good-faith determination that they possess no evidence favorable to the defendant in a criminal prosecution.”

The Due Process Clause of the Fourteenth Amendment, as interpreted in *Brady*, makes the good or bad faith of the State irrelevant when the State fails to disclose to the defendant material exculpatory evidence. But we think the Due Process Clause requires a different result when we deal with the failure of the State to preserve evidentiary material of which no more can be said than that it could have been subjected to tests, the results of which might have exonerated the defendant. Part of the reason for the difference in treatment is found in the observation made by the Court in *Trombetta* that “[w]henver potentially exculpatory evidence is permanently lost, courts face the treacherous task of divining the import of materials whose contents are unknown and, very often, disputed.” Part of it stems from our unwillingness to read the “fundamental fairness” requirement of the Due Process Clause as imposing on the police an undifferentiated and absolute duty to retain and to preserve all material that might be of conceivable evidentiary significance in a particular prosecution. We think that requiring a defendant to show bad faith on the part of the police both limits the extent of the police's obligation to preserve evidence to reasonable bounds and confines it to that class of cases where the interests of justice most clearly require it, i.e., those cases in which the

police themselves by their conduct indicate that the evidence could form a basis for exonerating the defendant. We therefore hold that unless a criminal defendant can show bad faith on the part of the police, failure to preserve potentially useful evidence does not constitute a denial of due process of law.

In this case, the police collected the rectal swab and clothing on the night of the crime; respondent was not taken into custody until six weeks later. The failure of the police to refrigerate the clothing and to perform tests on the semen samples can at worst be described as negligent. None of this information was concealed from respondent at trial, and the evidence—such as it was—was made available to respondent's expert who declined to perform any tests on the samples. The Arizona Court of Appeals noted in its opinion—and we agree—that there was no suggestion of bad faith on the part of the police. It follows, therefore, from what we have said, that there was no violation of the Due Process Clause.

The Arizona Court of Appeals also referred somewhat obliquely to the State's "inability to quantitatively test" certain semen samples with the newer P-30 test. If the court meant by this statement that the Due Process Clause is violated when the police fail to use a particular investigatory tool, we strongly disagree. The situation here is no different than a prosecution for drunk driving that rests on police observation alone; the defendant is free to argue to the finder of fact that a breathalyzer test might have been exculpatory, but the police do not have a constitutional duty to perform any particular tests.

The judgment of the Arizona Court of Appeals is reversed and the case remanded for further proceedings not inconsistent with this opinion.

JUSTICE STEVENS, concurring in the judgment.

. . . I concur in the Court's judgment. I do not, however, join the Court's opinion because it announces a proposition of law that is much broader than necessary to decide this case. It states "that unless a criminal defendant can show bad faith on the part of the police, failure to preserve potentially useful evidence does not constitute a denial of due process of law." In my opinion, there may well be cases

in which the defendant is unable to prove that the State acted in bad faith but in which the loss or destruction of evidence is nonetheless so critical to the defense as to make a criminal trial fundamentally unfair. This, however, is not such a case. Accordingly, I concur in the judgment.

JUSTICE BLACKMUN, with whom JUSTICE BRENNAN and JUSTICE MARSHALL join, dissenting.

The Constitution requires that criminal defendants be provided with a fair trial, not merely a “good faith” try at a fair trial. Respondent here, by what may have been nothing more than police ineptitude, was denied the opportunity to present a full defense. That ineptitude, however, deprived respondent of his guaranteed right to due process of law. In reversing the judgment of the Arizona Court of Appeals, this Court, in my view, misreads the import of its prior cases and unduly restricts the protections of the Due Process Clause. An understanding of due process demonstrates that the evidence which was allowed to deteriorate was “constitutionally material,” and that its absence significantly prejudiced respondent. Accordingly, I dissent. . . .

. . . Rather than allow a State's ineptitude to saddle a defendant with an impossible burden, a court should focus on the type of evidence, the possibility it might prove exculpatory, and the existence of other evidence going to the same point of contention in determining whether the failure to preserve the evidence in question violated due process. To put it succinctly, where no comparable evidence is likely to be available to the defendant, police must preserve physical evidence of a type that they reasonably should know has the potential, if tested, to reveal immutable characteristics of the criminal, and hence to exculpate a defendant charged with the crime. . . .

NOTES

1. *The Court's holding.* What did the Supreme Court hold in *Youngblood*? How is the case different from *Miller*? From *Brady v. Maryland*? Does *Youngblood* establish that there is no violation of due process in the following circumstances:

When a field test of a white powder taken from defendant did not reveal any controlled substance, the defendant was indicted for unlawful possession of a look-alike substance with intent to distribute. A month later, a laboratory test on the powder revealed cocaine. The defendant was then indicted for multiple charges involving possession of a controlled substance, and the look-alike substance charge was nol-prossed. Four months later, “upon observing certain computer data which showed that the look-alike substance charge was dismissed, an evidence technician destroyed the white powdery substance . . .” *People v. Newberry*, 638 N.E.2d 1196, 1198 (Ill. App. Ct. 1994).

2. *Youngblood's convictions.* According to court records, the 10-year-old boy who was attacked told police that he was abducted by a man with gray hair, a scar on his forehead and a bad right eye. Youngblood had black hair, a scar on his forehead and a bad left eye. See Maurice Possley, DNA Exonerates Inmate Who Lost Key Test Case Prosecutors Ruined Evidence in Original Trial, *Chi. Trib.*, Aug. 10, 2000, at 6. He also had a prior conviction for armed robbery. Laurie P. Cohen, DNA Tests Free Man Imprisoned 10 Years: Supreme Court Had Ruled Destruction of Evidence Didn't Prevent Fair Trial, *Wall St. J.*, Aug. 10, 2000, at B12.

Youngblood was tried in 1985, and a jury deadlocked 6-6, resulting in a mistrial. A second trial resulted in conviction. At his trials, Youngblood and his girlfriend testified he was at home at the time while she baked lemon meringue pies for a party. Possley, *supra*.

By the time the Arizona court of appeals reversed the conviction, Youngblood had served three years of a 10 1/2-year sentence. When the Supreme Court ruled against him, his conviction was reinstated and the case remanded. The state court of appeals again set aside the conviction, reasoning that the state constitution provided greater protection than the U.S. Constitution. However, the Arizona Supreme Court, reversed and reinstated the conviction. *Id.*

So in 1993, Youngblood went back to prison and served the rest of his sentence, concurrent with another five-year sentence on an aggravated assault conviction he received while out of prison after the first court of appeals decision. He was released in 1998 and registered as a sex offender, but later was arrested and jailed on a charge of violating the sex offender law by failing to report an address change. *Id.*

3. *Youngblood's exoneration.* In 1999, before the last arrest, lawyers representing Youngblood requested DNA testing on swabs taken from the boy after the attack. In August 2000, Youngblood, 47, walked out of jail. “This is like a miracle. The system does work, to a certain extent,” Youngblood said in a telephone interview. “If it weren't for DNA testing, I wouldn't be out now. At least I'm free now.” Maurice Possley, DNA Exonerates Inmate Who Lost Key Test Case Prosecutors Ruined Evidence in Original Trial, Chi. Trib., Aug. 10, 2000, at 6.

Prosecutors agreed to the DNA tests only after Youngblood promised that he would not sue law-enforcement officials. *Id.* But Youngblood sued anyway. He contended that he signed the waiver form involuntarily, since it was the only way he could obtain a DNA test. He also said he was on medication at the time, having been diagnosed as a paranoid schizophrenic, and “I didn't really know what I was signing.” Associated Press, Innocence Proved; Case Was Source of Adverse Evidence Preservation Ruling, News-wires, Aug. 10, 2000.

Police countered that Youngblood signed the forms on the advice of his public defender, who had asked the department to test the DNA sample instead of paying about \$1,600 to have it tested privately. “This was really the first time that we had someone come to us post-conviction and ask for our help in analyzing biological evidence to prove their innocence,” an Assistant County Attorney said. “We were trying to help this guy out.” *Id.* As Youngblood sees it, however, “[t]hey took away 17 years of my life, and all the best years.” The case settled for an undisclosed sum. *Id.*

Should post-conviction DNA testing ever be conditioned on a waiver of the right to sue for false imprisonment? Should the common-law remedy be replaced by a statutory system of no-fault compensation?

Barry A.J. Fisher
Developing a Forensic Science
Laboratory Operating Strategy*

31 *Journal of Forensic Sciences* 1177, 1178 (1986)

The police investigator sees us as a scientific resource to help prove his case. He is delighted when we can substantiate his theory of how a crime occurred and usually wants more strongly worded opinions than we often like to give. He cringes at the use of what he calls “weasel words” in laboratory reports, for example, “consistent with” and “similar to.” He wants absolute statements. The concept of class characteristics is foreign to him, and he would like nothing better than reports stating that, for example, the white cotton fiber found on the victim came from the defendant and no other.

The prosecuting attorney has little appreciation for forensic scientists. After all, how many lawyers successfully made it through physical chemistry for their baccalaureate? For the most part, although there are exceptions, lawyers are intimidated by us. We are indispensable in driving under the influence (DUI) of alcohol cases, required in drug prosecutions, and downright handy in rapes, assaults and murders. Yet many will argue that forensic scientists often confuse the jury as often as they help the case.

Defense attorneys see us as extensions of the police and prosecutors. I once gave a talk to a group of public defenders in Los Angeles. . . . I explained how I saw our role as an independent, scientific evaluator of the physical evidence. The lawyers in that group laughed at me. They saw me and all government employed forensic scientists as being on the side of the prosecution and not at all unbiased.

The courts see us as a bottleneck. If your laboratories are at all similar to mine, I’m certain that at one time or another you have had a backlog in driving under the influence cases or in narcotics cases. And what happens

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when the laboratory begins to fall behind in those cases? The courts are likely to be in an uproar about continuances.

Administrators see us as a bottomless pit into which is continuously poured money — money to buy spectrophotometers, gas chromatographs, mass spectrometers, and other high priced laboratory equipment of that ilk. One administrator once mused to me, “Do you know how many patrol cars that gas chromatography system could buy?”

Finally, the public sees forensic scientists in the most romantic terms. We are a modern incarnation of the legendary Sherlock Holmes. Quincy, the fictional TV forensic pathologist cum criminalist plays a key role in each of our institutions. The public believes that we have unlimited time and resources to expend on each and every case we examine. . . .

Michael J. Saks
Accuracy v. Advocacy:
Expert Testimony Before the Bench*
Technology Review, Aug.-Sept. 1987, at 43, 44-45

[E]xperts [are] vulnerable to the possibly distorting influence of lawyers. Long before the expert and lawyer arrive in court, a bond has formed between them. The influence of the lawyer is considerable. He or she may authorize a limited budget for analyzing the evidence and restrict the information provided to experts about the case. The attorney expects help and cooperation from experts, who know that the lawyer could hire someone else. The question is how far they are willing to be drawn out onto the forensic limb.

One prominent trial judge in Massachusetts likens the process to a seduction. The lawyer attempts to convince the experts to go as far as possible, and the experts try to resist the temptation to acquiesce. It is the lawyer’s job to test the limits and the expert’s job to set those limits. . . .

In contrast to what attorneys may want, experts’ professional colleagues expect them to give a competent and

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dignified account of the field without going beyond its limits. These expectations are sometimes expressed in a code of ethics. For example, the National Society of Professional Engineers states: “Engineers shall issue public statements only in an objective and truthful manner. Engineers shall be objective and truthful in professional reports, statements, or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony.” . . .

Whatever experts’ perceptions of the expectations of their colleagues, the likelihood that any sanctions will be applied against those who overstep their bounds is tiny. This fact was clear in a 1983 study I did with Richard Van Duizend, then an attorney with the National Center for State Courts. We contacted the ethics and discipline committees of professional associations such as the NSPE, the American Academic of Forensic Science, and the American Medical Association. We found that virtually no actions had been taken against members who had misrepresented the field’s knowledge or drawn insupportable conclusions on behalf of one party as expert witnesses. Complaints that did surface were typically brought by attorneys complaining that the experts they hired had misrepresented their educational or professional credentials. Professional organizations are in business to ensure their members’ well-being more than to police them.

John I. Thornton

Uses and Abuses of Forensic Science*

69 American Bar Association Journal 288, 292 (1983)

[C]onsider the distinction between the introduction of evidence and the introduction of an interpretation of that evidence. The two are by no means synonymous. Not infrequently, the side wishing to introduce its particular interpretation will treat itself to a scientific “smorgasbord,” selecting this or that morsel for examination by the forensic scientist. The evidence will be selected or rejected with only

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those items that conform to the arguments of one side actually being submitted for examination. A distinct possibility exists that the results of the examination by the forensic scientist will be skewed. This is an abuse of science because the scientist is not allowed to consider all alternative interpretations of the evidence. As a result, the ethical standards of the scientist may be challenged by cogent cross-examination.

These situations represent potential sources of mischief. There is nothing necessarily unethical or mendacious about these practices, and they even might not be unfair because opposing counsel is presumed to be equally astute in reviewing the potential evidence to be introduced. Attorneys orchestrate the presentation of physical evidence and bear the responsibility for the conduct of the case in general, and it is understandable that they will wish the evidence to support the best possible case. The danger is that conflicts easily arise between scientist and lawyer — the former attempts to describe the evidence as it actually is, while the latter attempts to describe it in the most favorable light.

NOTES

1. *Independence and objectivity*. Most scientists would insist that “the scientist should have no personal stake in the outcome of a civil or criminal case. The scientist’s expertise is in the application of science to a legal controversy and the proper interpretation of scientific findings” Joseph Peterson, *The Team Approach in Forensic Science*, in *Modern Legal Medicine, Psychiatry and Forensic Science* 993-94 (William J. Curran et al. eds., 1980). So too, most subscribe to the ideal of the “introduction of evidence by competent, objective scientists who constantly keep in mind the ethical responsibilities of the profession.” John I. Thorton, *Uses and Abuses of Forensic Science*, 69 *A.B.A.J.* 288, 291 (1983).

Yet, Saks describes the tendency of experts to identify with the party for whom they testify or to be manipulated by that party. Inasmuch as a witness is expected to answer only those questions put to him, is it reasonable for the

National Society of Profession Engineers to admonish its members to “include all relevant and pertinent information in . . . testimony”? If not, will cross-examination or opposing experts flush out the information that might not be elicited on direct examination, as Thornton’s mention of “astute” opposing counsel implies? Consider the following incident:

A convicted murderer who has served eight years of a life sentence today walked free from the Scottish Court of Criminal Appeal in Edinburgh when three judges quashed his conviction. . . . John Preece, aged 49, a former lorry driver, . . . was convicted of murdering Mrs. Helen Will, aged 54, of Mastick, Aberdeen, by a majority verdict at the High Court in Edinburgh in 1973. . . .

Lord Emslie said: “At the time of the trial Dr Clift, highly qualified and experienced, appeared to be an expert witness as to whose quality, detachment and scientific reliability there was no doubt.” But the court was now sure that Dr Clift’s evidence that the donor of the semen was an “A” secretor was misleading. Dr Clift had kept silent although he had known that the victim, Mrs Will, was also a group “A” secretor like Mr Preece.

The judge added: “This was conduct on the part of an expert witness which demonstrated a complete misunderstanding of the role of scientific witnesses in our courts and a lack of the essential qualities of accuracy and scientific objectivity which are normally to be taken for granted.” . . .

Lord Emslie added that Dr Richard Gregory, the Home Office scientist who had corroborated Dr Clift’s evidence . . . had been to some extent influenced by his superior — Dr Clift.

Prisoner Cleared of Murder After Serving 8 Years, *The Times* (London), June 20, 1981, at 1.

2. *Expert fraud*. The most extreme departure from the ideal of an objective, independent expert committed to professional values rather than advancing the interest of a party to litigation is outright perjury. Expert perjury can take the form of testifying to false credentials or to false findings. Instances of the former include *Maddox v. Lord*, 818 F.2d 1058, 1062 (2d Cir. 1987) (“county forensic serologist plead guilty to committing perjury by testifying falsely regarding his academic credentials”); *State v. Elder*, 433 P.2d 462 (Kan. 1967) (“a laboratory technologist . . . [falsely stated he had received a B.S. degree in chemistry and bacteriology . . . and that he had attended medical school . . . for two years”], and *State v. DeFronzo*, 394 N.E.2d 1027,

1028–30 (Ohio Ct. Common Pleas 1978) (police crime laboratory officer misstat[ed] his academic credentials . . . [including] a [nonexistent] four year degree . . . in Pharmacy, . . . a license from the Drug Enforcement Administration, on-the-job training, . . . [and attending] seminars”); cf. James Starrs, *Mountebanks Among Forensic Scientists*, in 2 *Forensic Science Handbook* 1, 7, 20-29 (Richard Safersetin ed. 1988) (reporting on a firearms expert who took some credit for “the development of penicillin, the ‘Pap’ smear, and to top it all off, the atomic bomb”).

As for fabricated testimony, an extraordinary career of testifying to false results was discovered in Lubbock, Texas, when Dr. Ralph Erdmann, a pathologist, included in an autopsy report the weight of the dead man’s spleen — even though the spleen previously had been removed in an operation. Dr. Erdmann supposedly performed some 450 autopsies a year for about 40 counties in the Texas Panhandle, but exhumations of some of the corpses revealed bodies without a mark on them. An attorney appointed by a state district court to investigate the matter concluded “[i]f the prosecution theory was that death was caused by a Martian death ray, then that was what Dr. Erdmann reported.” Richard L. Fricker, *Pathologist’s Plea Adds to Turmoil*, A.B.A.J., Mar. 1993, at 24. For more on the Erdmann scandal, see Geoffrey A. Campbell, *Erdmann Faces New Legal Woes*, A.B.A.J., Nov. 1995, at 32. For other instances, see *Mitchell v. Gilson*, 262 F.3d 1036 (10th Cir. 2001) (reversing a district court that refused to issue a writ of habeas corpus overturning a death sentence where a serologist, Joyce Gilchrist, testified “that Mr. Mitchell’s sperm had been found on the victim through anal and vaginal swabs,” and the prosecution made much of the fact that the defendant “had his way with her”—even though one of the tests that Gilchrist performed as well as DNA testing by the FBI excluded Mitchell);¹ *In re West Virginia State Police Crime Lab.*, 438 S.E.2d 501 (W.Va. 1993)

¹When Ms. Gilchrist, a chemist with the Oklahoma City Police Department for 21 years, was then discharged, she brought a civil rights complaint against the city. Among other things, she alleged that the firing was “First-Amendment retaliation for providing truthful expert testimony.” *Gilchrist v. City*, 71 Fed.Appx. 1, 4 (10th Cir. 2003).

(describing the conduct of Fred Zain, a serologist indicted in Texas and West Virginia for falsifying test results in hundreds of cases); Office of the Inspector General, Dep't of Justice, *The FBI DNA Laboratory: A Review of Protocol and Practice Vulnerabilities*, May 2004; Office of the Inspector General, Dep't of Justice, *The FBI Laboratory: An Investigation into Laboratory Practices and Alleged Misconduct in Explosives-Related and Other Cases*, Apr. 1997; Office of the Inspector General, Dep't of Justice, *The FBI Laboratory: An Investigation into Laboratory Practices and Alleged Misconduct in Explosives-Related and Other Cases*, Apr. 1997 (responding to "allegations of wrongdoing and improper practices within certain sections of the [FBI] Laboratory [involving] some of the most significant prosecutions in the recent history of the Department of Justice, including the World Trade Center bombing, the Oklahoma City bombing, and the mail bomb assassination of U.S. Circuit Judge Robert Vance"); Laura Frank & John Hanchette, *Convicted on False Evidence? False Science Often Sways Juries*, *Judges*, USA TODAY, July 19, 1994, at 1A; Paul C. Giannelli, *When the Evidence is a Matter of Life and Death*, N.Y. Times, Aug. 21, 1994; John F. Kelly & Phillip K. Wearne, *Tainting Evidence: Inside the Scandals at the FBI Crime Lab* (1998); Steve Mills et al., *When Labs Falter, Defendants Pay: Bias Toward Prosecution Cited in Illinois Cases*, *Chicago Trib.*, Oct. 20, 2004; Ed Timms & Diane Jennings, *Concern Grows over Use of Flawed Evidence: Chemist's Case Raises Fears of Problem's Scope*, *Dallas Morning News*, May 13, 2001.

Of course, misrepresentations are hardly confined to prosecution witnesses, government laboratories, or criminal cases. See *Kline v. State*, 444 So.2d 1102, 1103–04 (Fla. Ct. App. 1984) (perjury by a defense witness in the field of forensic hypnosis); *Williamson v. Haynes Best Western of Alexandria*, 688 So.2d 1201 (La. Ct. App. 1997) ("Dr. [Antoinette] Appel had claimed to be the first Ph.D. in neuropsychology in the United States, but retracted the claim when presented with written contradiction from her University. . . . She claimed to be a member and diplomate of the American Board of Professional Neuropsychologists, but the Board denied she was an active member. She claimed to have performed classified work and to have

gained much of her expertise with the National Aeronautics and Space Administration (NASA), but later admitted she was at NASA for only one month while attending a ‘space camp’ in 1968.”); Forensic Science Service, Press Release, Bogus ‘Expert’ Witness Exposed by the Real Thing, Sept. 8, 1998, available at <http://www.forensic.gov.uk/forensic/entry.htm> (reporting that a “bogus defence ‘expert’” who presented scientifically indefensible testimony in drunk driving cases was sentenced to five years imprisonment after being “found guilty on nine counts of perverting the course of justice at London’s Central Criminal Court”); Mark Hansen, Inexpert Witness: Lies, Resumé Fraud Take Down “Expert” Before He Takes Stand Again, ABA J., Feb. 20, 2001, at 20 (reporting that a man who had testified as a burn expert in several cases after claiming that he was a retired police officer, a college graduate, a vice president of the National Burn Victim Foundation, and to have attended seminars that had taken place simultaneously, pled guilty to perjury and fraud charges in Virginia); Gary Taylor, Faked Evidence Becomes Real Problem-From Fingerprints to Photos to Computer Data, Lawyers are Learning to be Vigilant, Nat’l L.J., Oct. 9, 1995. Indeed, a trial judge in Florida “banished from his courtroom for life an expert witness — who’s also a successful neurosurgeon . . . — after publicly branding him a “liar” and “insidious perjurer.” Dan Christensen, Appeals Court Lets Stand Ban of Surgeon as Expert Witness, Miami Daily Bus. Rev., June 15, 2000.

3. *Research Bias*. Of course, the cases listed above are exceptional. In addition to occasional outright fabrications from the expert witness, however, there are threats to objectivity in the scientific research literature on which an expert might draw. How should the law respond to the concern that:

[T]he scientific knowledge about which an expert testifies may itself be biased. This can occur in at least three ways. The least difficult of these distortions to detect, perhaps, is the distortion of research results through control over reporting of those results. Somewhat more difficult to detect is a distortion of the record caused by selective funding. Finally, the most difficult problem is a distortion of research results by researchers themselves.

Mark R. Patterson, *Conflicts of Interest in Scientific Expert Testimony*, 40 *Wm. & Mary L. Rev.* 1313, 1345 (1999)? According to Professor Patterson, cross-examination is not adequate to convey the significance of these possible infirmities to jurors. In his view, a testifying expert should not be able to rely on any scientific research unless funding sources are disclosed and the research data are made available in the event of any apparent “conflict of interest.”

4. *Selection of expert witnesses.* Many attorneys, and much of the public, believe that “an expert can be found to support almost any position.” Bert Black, *A Unified Theory of Scientific Evidence*, 56 *Fordham L. Rev.* 595, 597-98 (1988). Indeed, the former chief judge of the U.S. District Court for the the Eastern District of New York is persuaded that “[a]n expert can be found to testify to the truth of almost any factual theory, no matter how frivolous, thus validating the case sufficiently to avoid summary judgment and force the case to trial.” Jack Weinstein, *Improving Expert Testimony*, 20 *U. Rich. L. Rev.* 473, 482 (1986). The availability of such testimony from “the expert-for-hire,” *id.*, is not necessarily the result of venality. “The scientific community is large and heterogeneous, and a Ph.D. can be found to swear to almost any ‘expert’ proposition, no matter how false or foolish.” Peter Huber, *Safety and the Second Best: The Hazards of Public Risk Management in the Court*, 85 *Colum. L. Rev.* 277, 333 (1985); see also Zakaria Erzinçlioglu, *British Forensic Science in the Dock*, 392 *Nature* 859 (1998).

5. *Relaxing the adversarial role of the forensic expert.* In light of the widely perceived problems noted above, suggestions to reform, if not abandon, the adversary system of adjudication are not lacking. For an empirical study and a sustained critique of the adversarial use of experts, see Samuel Gross, *Expert Evidence*, 1991 *Wis. L. Rev.* 1113 (1991); see also Anthony Champagne et al., *Expert Witnesses in the Courts: An Empirical Examination*, 76 *Judicature* 5 (1992) (very limited survey finding that lawyers “want articulate, partisan experts with integrity, [who] charge reasonable fees, have an excellent courtroom

demeanor, and [are not] tentative in stating conclusions”); John D.J. Havard, *Expert Scientific Evidence Under the Adversarial System: A Travesty of Justice?* 32 *J. Forensic Sci. Soc’y* 225 (1992) (urges movement toward continental system of court experts with written reports and full disclosure); Symposium, *Expert Evidence*, 16 *L. & Hum. Behav.* 253 (1992). Professor John Langbein, who maintains that the West German system of adjudication is far superior, is particularly critical of the role of experts in civil trials in the United States. John Langbein, *The German Advantage in Civil Procedure*, 52 *U. Chi. L. Rev.* 823, 835-36 (1985). Court appointed experts figure prominently in the Continental, accusatorial systems of criminal justice. For example, court appointed forensic medical experts in some countries usually sit in court during the whole trial, question witnesses, explain their findings and conclusions before being examined by the parties, and may discuss relevant points not raised by the parties. See J. Chr. Giertsen, *The Doctor and the Court in Norway*, 36 *Forensic Sci. Int’l* 11, 12-14 (1988). An interim report of a committee reviewing the use of experts in civil cases in England comes close to calling for abandonment of experts retained by the parties. See Peter Fenn et al., *Scientific Experts: More Attention Needed*, 378 *Nature* 754 (1995); see also Zakaria Erzinclioglu, *British Forensic Science in the Dock*, 392 *Nature* 859, 860 (1998) (“First, I do not see why the forensic scientist should be answerable to one side or the other in court. After all, the judge himself is a neutral participant in the adversarial process and there is no reason why forensic scientists should not also be neutral. . . . The second requirement is a fully staffed, statutory body of forensic science that would be answerable solely to the judiciary.”).

Occasionally court-appointed experts are employed in this country as well, and there is room to expand their role. See, e.g., *Learned Hand, Historical and Practical Considerations Regarding Expert Testimony*, 15 *Harv. L. Rev.* 40 (1901); D.H. Kaye et al., *The New Wigmore, A Treatise on Evidence: Expert Evidence* § 10.4.1 (2004).