

A Call to Arms: Part I

The 2009 NAS report on forensic science provides new tools for the defense bar.

BY MARK W. PROTHERO



How can you fight law enforcement's science when you're representing someone accused of an awful offense? Science is sci-

ence. Black and white. It is or it isn't. Sure, you can believe what you want, science be damned.¹ But science is *proof*. And science is what can connect the dots in a case built on otherwise skimpy or unconvincing circumstantial

wrongful convictions were, at least in part, attributable to fraudulent or faulty crime lab work and/or "junk" science.⁴

The fallibility of one type of forensic evidence, fingerprint identification, received more attention than ever before after the high-profile case of Brandon Mayfield, the Portland lawyer wrongly accused in 2004 of a terrorist bombing in Madrid based upon the FBI's fingerprint experts' analysis.⁵

In 2006, Congress — in response to these growing concerns — passed a law that required a study of the current state of forensic science in the United States.⁶ "Recognizing that *significant improvements are needed in forensic science* Congress directed

Arizona State University College of Law described the report as "a blockbuster that will completely change the legal landscape regarding forensic evidence."¹⁰

Forensic Disciplines

Note that I will use the term "forensic disciplines" when referring to those forensic "sciences" with no established scientific basis or validation. I avoid calling them a "science" in briefs and before judges and juries. In the words of the NAS Report:

Although some of the techniques used by the forensic science disciplines — such as DNA analysis, serology, forensic pathology, toxicology, chemical analysis, and digital and multimedia forensics — are built on solid bases of theory and research, *many other techniques have been developed heuristically. That is, they are based on observation, experience, and reasoning without an underlying scientific theory, experiments designed to test the uncertainties and reliability of the method, or sufficient data that are collected and analyzed scientifically.*¹¹

The Report

Following is a summary of what you will find in this report.

- Chapter One introduces and has background discussion on forensic science in general.
- Chapter Two examines the "forensic science community" and

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evidence.²

However, as a result of work done by the Innocence Project, we know that at least 244 persons have been exonerated and released from prison after being wrongly convicted of serious violent crimes such as rape, robbery, and murder. And the number continues to grow.³

Research has shown that about 70% of these wrongful convictions involved faulty eyewitness identifications. We also know with certainty that false confessions have resulted in wrongful convictions. And we know from Innocence Project cases that 50-60% of

the National Academy of Sciences to undertake this study."⁷

The National Academy of Sciences called on its research arm, the National Research Council, to conduct the study. The NRC gathered many prominent scientists and professors⁸ who held meetings and took testimony over the course of 2007 and 2008. In February of 2009, the report went public. *Strengthening Forensic Science In The United States: A Path Forward* was immediately hailed by Barry Scheck as "a major turning point in the history of forensic science in America."⁹ Paul Schiff Berman, dean of the

discusses the need for more integration of the organizations and agencies involved in various ways with forensic science.

- Chapter Three discusses the admission of forensic science evidence in court. While the legal issues involving ER 702, *Frye*, and *Daubert* are of interest to those of our ilk, they are not directly a topic of this article. However, as the DNA Wars of the 1990s remind us, the importance of the pre-trial admissibility hearing is clear:

When forensic DNA first appeared, it was sometimes called “DNA fingerprinting” to suggest that it was as reliable as fingerprinting, which was then viewed as the premier identification science and one that consistently produced irrefutable results. During the effort to validate

DNA evidence for courtroom use, however, it became apparent that *assumptions about fingerprint evidence had been reached without the scientific scrutiny being accorded DNA*.¹²

Like fingerprinting, most forensic disciplines have for many years been able to avoid or evade serious scientific scrutiny — and legal challenge.

- Chapter Four discusses the underlying principles of the scientific method and the interpretation of reliable, scientific data. This is a critical piece of the puzzle as it illustrates the difference between the validation and reliability of forensic DNA and, for example, fingerprint analysis, toolmark identification, or hair analysis.
- Chapter Five is the most informa-

tive and helpful part of the report. This is where the report examines several forensic disciplines that have routinely been admitted as evidence in trials.¹³ Each section of this chapter examines the methods of evidence collection, methods of analyses and interpretation, and the reporting of conclusions and results; each section concludes with the committee’s summary assessment of the particular forensic discipline. My summary of this chapter begins on page 9.

- Chapter Six discusses the perception of resistance from many in the forensic science community to gaining new information that would improve the discipline. It reports on the need for improvements and makes recommendations to achieve those improvements.
- Chapter Seven discusses the need

JUSTICE SCALIA ON THE NAS REPORT

Nor is it evident that what respondent calls “neutral scientific testing” is as neutral or as reliable as respondent suggests. Forensic evidence is not uniquely immune from the risk of manipulation. According to a recent study conducted under the auspices of the National Academy of Sciences, “[t]he majority of [laboratories producing forensic evidence] are administered by law enforcement agencies, such as police departments, where the laboratory administrator reports to the head of the agency.” National Research Council of the National Academies, *Strengthening Forensic Science in the United States: A Path Forward* 6–1 (Prepublication Copy Feb. 2009) (hereinafter NAS Report). And “[b]ecause forensic scientists often are driven in their work by a need to answer a particular question related to the issues of a particular case, they sometimes face pressure to sacrifice appropriate methodology for the sake of expediency.” *Id.*, at S–17. A forensic analyst responding to a request from a law enforcement official may feel pressure — or have an incentive — to alter the evidence in a manner favorable to the prosecution.

Confrontation is one means of assuring accurate forensic analysis. While it is true, as the dissent notes, that an honest analyst will not alter his testimony when forced

to confront the defendant, post, at 10, the same cannot be said of the fraudulent analyst. See Brief for National Innocence Network as Amicus Curiae 15–17 (discussing cases of documented “drylabbing” where forensic analysts report results of tests that were never performed); National Academy Report 1–8 to 1–10 (discussing documented cases of fraud and error involving the use of forensic evidence). Like the eyewitness who has fabricated his account to the police, the analyst who provides false results may, under oath in open court, reconsider his false testimony. See *Coy v. Iowa*, 487 U.S. 1012, 1019 (1988). And, of course, the prospect of confrontation will deter fraudulent analysis in the first place.

Confrontation is designed to weed out not only the fraudulent analyst, but the incompetent one as well. Serious deficiencies have been found in the forensic evidence used in criminal trials. One commentator asserts that “[t]he legal community now concedes, with varying degrees of urgency, that our system produces erroneous convictions based on discredited forensics.” Metzger, *Cheating the Constitution*, 59 Vand. L. Rev. 475, 491 (2006). One study of cases in which exonerating evidence resulted in the overturning of criminal convictions concluded that invalid forensic testimony contributed to the convictions in 60% of the cases. Garrett & Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 Va. L. Rev. 1, 14 (2009). And

for improved oversight.

- Chapter Eight discusses education and training.
- Chapter Nine addresses the variety of medical examiner and coroner systems throughout the United States.
- Chapter Ten discusses Automated Fingerprint Identification Systems (AFIS).
- The report concludes with Chapter Eleven's examination of the role of the forensic science disciplines in homeland security.

Using the Report

This is an important report that should carry substantial weight in court. In the recent U.S. Supreme Court decision *U.S. v. Melendez Diaz*,¹⁴ Justice Scalia gave the NAS Report an early boost by citing it in his majority

opinion. [see sidebar]

For criminal defense attorneys, this report is truly groundbreaking: the first shovel of dirt has been removed and now we have to begin the construction. It will take many *years* of hard work and concerted effort by the defense bar to bring the promise of the report and its recommendations to fruition.

Our work on forensic DNA has taught us, and the scientists have now clearly expressed, the need to get rid of the “junk” in the science being used in our criminal justice system. We must insist that any evidence used against our clients be valid and reliable; if it is presented to the jury as science, there must be a solid, scientific basis. Here are a few ways to make that happen:

- **Educate:** At a pretrial conference on a murder case in mid-July, I

noted that the defense would be seeking a *Frye* hearing on firearm identification based on comparison of cartridge casings in light of the criticisms in the NAS Report. The judge, one I consider to be among the smarter judges around, said with an incredulous tone, “You mean there’s some new report that says I can’t admit evidence I’ve been routinely admitting, unchallenged by the way, for many, many years?!?”

“Yes. That’s exactly what I’m saying.”

We need to educate our bench on the content of this report — and to start by letting them know it exists.

- **Funding:** Public defenders and court-appointed counsel will have to seek expert funding at public expense. This will involve educating the holders of the purse strings

the National Academy Report concluded:

*The forensic science system, encompassing both research and practice, has serious problems that can only be addressed by a national commitment to overhaul the current structure that supports the forensic science community in this country. National Academy Report P-1 (emphasis in original).*¹⁶

Like expert witnesses generally, an analyst’s lack of proper training or deficiency in judgment may be disclosed in cross-examination.

This case is illustrative. The affidavits submitted by the analysts contained only the bare-bones statement that “[t]he substance was found to contain: Cocaine.” App. to Pet. for Cert. 24a, 26a, 28a. At the time of trial, petitioner did not know what tests the analysts performed, whether those tests were routine, and whether interpreting their results required the exercise of judgment or the use of skills that the analysts may not have possessed. While we still do not know the precise tests used by the analysts, we are told that the laboratories use “methodology recommended by the Scientific Working Group for the Analysis of Seized Drugs,” App. to Brief for Petitioner 1a–2a. At least some of that methodology requires the exercise of judgment and presents a risk of error that might be explored on cross-examination. See 2 P. Giannelli & E. Imwinkelried, *Scientific Evidence* §23.03[c], pp. 532–533, ch. 23A, p. 607 (4th ed. 2007) (identifying four “critical er-

rors” that analysts may commit in interpreting the results of the commonly used gas chromatography/mass spectrometry analysis); Shellow, *The Application of Daubert to the Identification of Drugs*, 2 *Shepard’s Expert & Scientific Evidence Quarterly* 593, 600 (1995) (noting that while spectrometers may be equipped with computerized matching systems, “forensic analysts in crime laboratories typically do not utilize this feature of the instrument, but rely exclusively on their subjective judgment”).

The same is true of many of the other types of forensic evidence commonly used in criminal prosecutions. “[T]here is wide variability across forensic science disciplines with regard to techniques, methodologies, reliability, types and numbers of potential errors, research, general acceptability, and published material.” National Academy Report S-5. See also *id.*, at 5–9, 5–12, 5–17, 5–21 (discussing problems of subjectivity, bias, and unreliability of common forensic tests such as latent fingerprint analysis, pattern/impression analysis, and toolmark and firearms analysis). Contrary to respondent’s and the dissent’s suggestion, there is little reason to believe that confrontation will be useless in testing analysts’ honesty, proficiency, and methodology — the features that are commonly the focus in the cross-examination of experts.

Melendez Diaz v. Massachusetts, 129 S. Ct. 2527 at 2536–2537, 174 L.Ed.2d 314 (2009)

in a given jurisdiction. The NAS Report provides powerful support for such requests and gives us the ammunition to attack evidence of questionable reliability that we have been routinely accepting without challenge. It is important for us to use this new ammunition to the fullest extent—and to make the proper record while doing so.

- **Experts:** Finding the right experts can be a challenge itself. Those considered “experts” in a given forensic discipline may be the ones who have been doing it a long time. Absent an occasional lone ranger whistleblower, these are also the proponents of the discipline with their own well-established biases. This is generally *not* the group we will be turning to for independent scrutiny of the reliability of the given forensic discipline.¹⁵

Academia may be the best source of potential experts. There are professors of law, social justice, criminology, and related fields with expertise in forensic science. Look at the professors and researchers who either participated, testified, or were cited in the NAS Report. Statisticians, and professors of statistics, may also be consulted in cases involving identification based on purported “matches” between, for example, shoeprints, tire treads, or toolmarks.¹⁶

- **Frye hearings:** Get money. Retain experts. Move for a *Frye* hearing. Get *Frye* hearing. Win *Frye* hearing. Piece of cake.

In reality, none of this will be easy. Just getting a hearing may be tough. Assume the state will fight it (“It’s not ‘novel scientific evidence’ ... it’s been admitted for years”).¹⁷


“Winning” the *Frye* hearing may mean different things: exclusion of evidence; limits on the testimony of the state’s experts; jury instructions that impact the weight a jury may give such evidence.

- **Make a good record for appeals:** We are swimming upstream, in a wide, old river with a strong current. Progress will be made in small increments. We will be pushed downstream again and again but we’ve got to keep fighting against the current. Our losses and defeats will be important steps in the education process. So — even in the face of great obstacles, with all the inertia against us and defeat looming at every turn — it is critical that trial attorneys work hard and insist on creating a proper record for our appellate brothers and sisters. Ultimately, these issues will be heard by our Supreme Court.

The Emperor Has No Clothes

Well, as least there’s no scientifically valid and reliable basis to objectively prove he has clothes. Back when it was first introduced, we knew

forensic DNA was going to have significant impact on our system. I’m not sure anyone could have predicted the statistics we have seen from the work of the Innocence Project. But the truth is coming out.

Unreliable evidence, under the guise of science, has been used for decades to convict our clients of crimes. The mask has been lifted. The time is now. The NAS Report has basically called “bullshit” on many forensic disciplines. This evidence is being used against our clients. When you get a case involving one of the pseudosciences, use the NAS Report as your weapon and attack it. It’s time for us, the criminal defense bar, to step to the plate and do our job. 

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Notes

1. See *Scopes v. State of Kentucky*, 154 Tenn. 105 (1927)
2. Brandon Garrett and Peter Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions* 95 Va. L. Rev. 1 (2009)
3. See <http://www.innocenceproject.org> for updated statistics.
4. Garrett and Neufeld, *Invalid Forensic Science*. See also B.L. Garrett, *Judging Innocence* 108 Colum.L. Rev. 55 (2008).
5. Mayfield was wrongly accused after an FBI analyst determined it was Mayfield’s fingerprint. Two other FBI analysts confirmed the first erroneous conclusion. Cite NAS Report
6. *Science, State, Justice, Commerce, and Related Appropriations Act of 2006*. Public Law no. 109-108 (November 22, 2005)
7. Committee on Identifying the Needs of the Forensic Science Community, National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* (Washington DC: National Academies Press, 2009), xix. (emphasis added)
8. See Appendix A for biographies of the persons on the committee. *A Path Forward*, 282-302.
9. *Seattle Times*, February 19, 2009
10. *ASU News*, February 9, 2009 http://asunews.asu.edu/20090209_forensic-science
11. *Path Forward*, 128. (emphasis added)
12. *Path Forward*, 104.
13. This chapter also includes a look at the emerging forensic discipline involving computers, digital technology, and multimedia.
14. *Melendez Diaz v. Massachusetts* 557 U.S., 129 S. Ct. 2527, ___L. Ed. 3d
15. Although we may still retain their services to see if things were done in the accepted manner in a particular case for purpose of ER 702 as opposed to the *Frye* determination.
16. In my pending case in King County involving firearm identification through cartridge casings, we have been authorized funding for three experts: Professor Adina Schwartz, Professor William Thompson, and William Tobin, former chief metallurgist for the FBI.
17. *Path Forward*, 107-10.