

First Public Meeting
of the
National Commission on Forensic Science

February 3, 2014

Office of Justice Programs,
810 7th Street, NW,
3rd floor ballroom
Washington, DC 20531

*Reflections on the Findings of the National Academy of Sciences
Committee on Identifying the Needs of the Forensic Science Community*

The Honorable Harry T. Edwards
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Deputy Attorney General Cole and Under Secretary Gallagher; members the National Commission on Forensic Science; and esteemed guests. It is a real honor for me to participate in this inaugural meeting of the Commission. I am privileged to speak as the past Co-Chair of the National Academy of Sciences Committee on Identifying the Needs of the Forensic Science Community. Our Committee focused on identifying problems in the forensic disciplines. The Commission will now help to find and implement solutions to these problems. Some of us were unsure whether this day would ever come. So I greet you today with a sigh of relief, and also with great expectations.

On February 18, 2009, the NAS Committee published its final report.¹ We concluded that, "[w]ith the exception of nuclear DNA analysis, . . . no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source." Our report also documented:

- the paucity of scientific research confirming the validity and reliability of forensic disciplines and establishing quantifiable measures of uncertainty in the conclusions of forensic analyses;
- the paucity of research on human observer bias and sources of human error in forensic examinations;
- the lack of autonomy and transparency of crime laboratories;
- the absence of rigorous, mandatory certification requirements for practitioners;
- the absence of uniform, mandatory accreditation programs for laboratories;
- the failure of forensic practitioners to adhere to robust performance standards;
- the failure of forensic experts to use standard terminology in reporting on and testifying about the results of forensic investigations;
- the lack of effective oversight; and
- a gross shortage of adequate training and continuing education for practitioners.

The NAS Report made a number of specific recommendations to address these problems. One of our most important was that Congress establish a new, independent federal entity to support and oversee the forensic disciplines, and to implement a fresh agenda to address the problems in the forensic community. This Commission does not meet all of the criteria we had in mind, but it at least offers a measure of hope. The one thing that I am sure of is that the members of the Commission have the talent and wisdom to get the job done. I hope that you also have the commitment and resources to do what is necessary to complete the admittedly difficult but incredibly important task that lies

ahead.

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The most significant aspect of the NAS Report is its call for *real science* to support the forensic disciplines. I cannot overstate this point. My fellow Committee members and I were astonished by the paucity of rigorous scientific research testing the validity and reliability of the forensic disciplines.²

I will not spend additional time reviewing the details of our findings because the Report is easily accessible. Rather, I want to impress upon you one crucial point: ***Judicial review, by itself, will not cure the infirmities of the forensic community.***

When our Committee issued its Report, I heard a number of very smart people suggest that once lawyers began to introduce the Report in judicial proceedings, judges would limit the admissibility of forensic evidence and issue seminal decisions that would result in dramatic reforms of the forensic disciplines. I did not believe it then, and I do not believe it now. Absent meaningful action by scientists and forensic analysts, the courts will continue to admit forensic evidence in criminal trials, without regard to its scientific validity and reliability. Why? Because precedent supports this practice. Yes, there have been a few trial court decisions that have limited the admission of some forensic evidence; but, to date, there has not been a single federal court of appeals decision that has curbed its admissibility.

The Supreme Court teased us with its 2009 decision in Melendez-Diaz v. Massachusetts.³ The Court quoted the NAS Report, stating: “[t]he forensic science system . . . 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.” But Melendez-Diaz would effect real reforms in the forensic community have proven fanciful. The simple truth is that the Supreme Court is not going to issue a seminal decision like Brown v. Board of Education to change the culture of the forensic community. The burden falls on the scientific community to get this done.

Let me explain. In 1993, in Daubert v. Merrell Dow Pharmaceuticals, Inc.,⁴ the Supreme Court articulated the legal framework governing the admissibility of expert opinion. The Court ruled that a “trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.” The Court stated that “evidentiary reliability will be based upon scientific validity.” Notably, the Court also expressed confidence in the adversarial system, stating that “[v]igorous cross-examination [and], presentation of contrary evidence . . . are the traditional and appropriate means of attacking” evidence.

Notwithstanding the Court’s promise of empowering judges to act as gatekeepers protecting jurors from unreliable expert testimony, Daubert and its progeny have not served the expected function in criminal trials. This is not surprising. The Supreme Court itself

described the Daubert standard as “flexible” and stated that trial judges would have great discretion in deciding whether to admit purportedly scientific evidence. Great discretion at the trial level means that there is no clear substantive standard by which appellate judges can review the judgments of trial courts. Thus, at least in criminal cases, Daubert has effectively commanded little. And the Supreme Court’s suggestion that the “adversarial system” is an adequate means of demonstrating the unreliability of forensic evidence has proven to be naive.

The judiciary’s adherence to the rule of law is another reason why decisions under Daubert have not resulted in any meaningful limitations on the admissibility of forensic evidence. In the United States, the rule of law embraces the quest for constancy and predictability, as well as a determination to treat like cases alike. Therefore, even as many judges have recognized that the methods used by fingerprint, ballistics, tool mark, bite mark, handwriting, fire debris, and fiber experts have not been scientifically verified, they have continued to admit questionable and overdrawn testimony from forensic practitioners on the grounds that such evidence has been relied upon in the justice system for many years. Each ill-informed decision becomes a precedent binding on future cases.

The courts will not be able to move beyond this misguided precedent until real science is brought to bear in assessing the validity and reliability of forensic disciplines and in establishing quantifiable measures of uncertainty in the conclusions of forensic analyses. Judges, lawyers, and jurors need an honest accounting from scientists. Without it, we will continue to default to past judicial decisions that overestimate the scientific validity of forensic disciplines.

Let me give you a couple of examples of the sort of judicial default that I am talking about. In a 2009 decision pertaining to fingerprint evidence, the Tenth Circuit⁵ agreed with the “defendant that th[e] record [did] not show that the [fingerprinting] technique has been subject to testing that would meet all of the standards of science.” Nonetheless, the court ruled that the evidence was properly admitted because “fingerprint identification has been used extensively by law enforcement agencies all over the world for almost a century.” This is a stunning *non sequitur*, since longstanding error is error all the same. But, as I have already noted, this line of reasoning is routinely followed by the U.S. Courts of Appeals.⁶

In a similar vein, the First Circuit⁷ upheld the admissibility of fingerprint evidence despite recognizing serious shortcomings in the scientific methodology. In doing so, the court sustained the trial judge’s determination that the case law is overwhelmingly in favor of the admitting the testimony on fingerprint examiners “under virtually any circumstance.” It also affirmed the trial judge’s conclusion that “the only way it would have considered excluding the testimony or giving a limiting instruction [was] if there had been data, real evidence presented about the limitations of fingerprinting.”

Notice that these decisions, and others like them, effectively shift the burden of proof, creating a presumption of admissibility. The prosecutor is not required to prove that the proffered forensic evidence is scientifically valid and reliable and therefore admissible.

Rather, the defendant is required to show that the evidence is invalid and unreliable, and therefore inadmissible.

When the courts look outside precedent to justify the admission of forensic evidence, the effect can be equally disquieting. For example, in a Seventh Circuit decision, the court stated that:

Matching latent fingerprints is . . . a bit like . . . [e]yewitness evidence. . . . The eyewitness saw the perpetrator of a crime. His recollection of the perpetrator's appearance is analogous to a latent fingerprint. He sees the defendant at the trial – that sighting is analogous to a patent fingerprint. He is asked to match his recollection against the courtroom sighting – and he is allowed to testify that the defendant is the perpetrator, not just that there is a close resemblance. . . . [T]he [fingerprint] matching process is judgmental rather than scientifically rigorous. . . .

This rationale is quite stunning in what it suggests.

First, eyewitness testimony is typically offered by a person who is not qualified as an expert. A jury understands that eyewitness identifications are based on a witness's fallible perception and memory, rather than scientific principles. In contrast, fingerprint experts – like practitioners in other pattern-matching disciplines – claim to rest their conclusions on rigorous scientific methodologies; and juries accept their testimony on these terms, often giving it more weight than it merits.

Second, the Seventh Circuit's opinion also suggests that although fingerprinting is not scientifically rigorous, it is an acceptable technique because examiners receive extensive training. But the NAS Report found that there is no good scientific basis for determining a "match" when the examiner has only a partial or smudged print. Therefore, any "training" with respect to this category of prints is necessarily suspect. Furthermore, not all fingerprint examiners are similarly well trained, nor is the field subject to mandatory standardized practices.

The reality is that, with respect to forensic disciplines involving subjective matching, the NAS Report found a dearth of scientific research establishing performance limits, ascertaining quantifiable measures of uncertainty, and addressing the impact of either sources of variability or the contextual biases of examiners. Fingerprint evidence involving clear, properly secured prints is undoubtedly better than the evidence offered in many other forensic disciplines. But that is not the point. The point is that, until scientific studies confirm the validity and reliability of pattern-identification techniques, our system of justice needs forensic examiners to own up to the limitations of their disciplines.

Fortunately, some people are beginning to pursue credible scientific assessment of forensic methods. For example, in May 2011, Ulery, Hicklin, *et al* published a study titled the *Accuracy and Reliability of Forensic Latent Fingerprint Decisions*.⁸ The authors give indications that the competency of fingerprint examiners might improve with good

certification and training programs, standardized practices, blind verification procedures, and consistent oversight. Most importantly, they make clear that "[f]urther research is necessary to identify the attributes of prints associated with false positive or false negative errors, such as quality, quantity of features, distortion, background, substrate, and processing method." In other words, the authors confirm that we need more than history and legal precedent to determine the validity and reliability of friction ridge analysis.

Professor Jennifer Mnookin, a highly regarded legal scholar, who specializes in evidence, is leading a comprehensive study of error rates in latent fingerprint evidence. She has poignantly written:

Science deals in probabilities, not certainty. The only forensic science that makes regular use of formal probabilities is DNA profiling, in which experts testify to the probability of a match. None of the rest of the traditional pattern-identification sciences – such as fingerprinting, ballistics, fiber and handwriting analysis – currently has the necessary statistical foundation to establish accurate probabilities. Yet, instead of acknowledging their imperfect knowledge, [too many forensic practitioners] routinely testify that they can [match the evidence to the defendant] to the exclusion of all other people in the world with 100% certainty. . . . The courts have almost entirely turned a deaf ear to these [problems], essentially giving forensic science and its practices a free pass, simply because they've been part of the judicial system for so long. Meanwhile, scandals continue to come to light across the nation involving error and even fraud in labs. . . . We want and need forensic science in our legal system, but we have to be able to trust it. . . . Our system of justice demands no less.⁹

This critique cannot be ignored. Because accused parties in criminal cases are convicted on the basis of testimony from forensic experts, much depends upon whether the evidence offered is scientifically valid and reliable. Ask Peter Nuefeld, Co-Director of the Innocence Project and a member of the Commission, about the 300-plus post-conviction DNA exonerations in the United States. A number of the exonerated individuals were convicted, at least in part, on the basis of forensic evidence. But fixing the problem is not just about protecting innocent people. We are also seeking to protect society from perpetrators of criminal acts who remain at large whenever someone is wrongfully convicted.

The adversarial process is not suited to the task of finding "scientific truth." The judicial system is encumbered by judges and lawyers who generally lack the scientific expertise necessary to comprehend and evaluate forensic evidence in an informed manner. And the judicial system embodies a case-by-case adjudicatory approach that is not well suited to address the systematic problems in many of the forensic disciplines. Those of us who work in the justice system need help from those of you who are scientists.

The development of the scientifically valid programs, training, technology, and databases associated with DNA analysis have resulted from substantial and steady federal

support and serious academic research. The goals of justice command that similar support be afforded to other forensic disciplines that offer the promise of achieving scientific reliability.

I have heard some cynical observers suggest that the Commission has been established simply to placate the many people in this country who have decried the absence of meaningful reform in the forensic community. These cynics do not believe that anything will come of this venture. I hope they are wrong. In any event, I trust that you know that many people will be watching your efforts with great interest in the months ahead.

In his 1963 Letter from Birmingham Jail, Rev. Martin Luther King, Jr., reminded us that *"Injustice anywhere is a threat to justice everywhere."*¹⁰ Isn't this the point? We are not talking about good science merely for its own sake. We are talking about the need for good science in order to serve justice. And when justice is done, our society as a whole is the better for it. I sincerely hope that the work of this Commission will push us closer to this goal.

ENDNOTES

1. Committee on Identifying the Needs of the Forensic Science Community, National Research Council of the National Academies, *Strengthening Forensic Science in the United States: A Path Forward* (2009).
2. See generally, Harry T. Edwards, *The National Academy of Sciences Report on Forensic Sciences: What it Means for the Bench and Bar*, 51 JURIMETRICS J. 1 (Summer 2010); Harry T. Edwards, *Solving the Problems That Plague the Forensic Science Community*, 50 JURIMETRICS J. 5 (Fall 2009).
3. *Melendez-Diaz v. Massachusetts*, 129 S. Ct. 2527 (2009).
4. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 593-94 (1993).
5. *United States v. Baines*, 573 F.3d 979, 990-91 (10th Cir. 2009).
6. *United States v. Avitia-Guillen*, 680 F.3d 1253, 1260 (10th Cir. 2012); *United States v. John*, 597 F.3d 263 (5th Cir. 2010); *United States v. Mahone*, 453 F.3d 68 (1st Cir.2006); *United States v. Abreu*, 406 F.3d 1304 (11th Cir. 2005); *United States v. Crisp*, 324 F.3d 261 (4th Cir. 2003); *United States v. Collins*, 340 F.3d 672 (8th Cir. 2003); *United States v. Havvard*, 260 F.3d 597 (7th Cir. 2001) (same); *United States v. Sherwood*, 98 F.3d 402 (9th Cir. 1996).
7. *United States v. Pena*, 586 F.3d 105 (1st Cir. 2009).
8. Bradford T. Ulerya, R. Austin Hicklina, JoAnn Buscagliab, and Maria Antonia Robertsc, *Accuracy and Reliability of Forensic Latent Fingerprint Decisions*, Proceedings of the National Academy of Sciences of the United States of America, May 10, 2011, vol. 108 no. 19, available at <http://www.pnas.org/content/108/19/7733.full>
9. Jennifer L. Mnookin, Op-Ed., *Clueless 'science,'* L.A. Times, Feb. 19, 2009, at A21.
10. Many citations are listed in *Letter from Birmingham Jail*, WIKIPEDIA, THE FREE ENCYCLOPEDIA, http://en.wikipedia.org/wiki/Letter_from_Birmingham_Jail