

# Duke Law Journal Online

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VOLUME 69

SEPTEMBER

2019

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Reflection

## FORENSICS AT THE FEDERAL LEVEL

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What have the National Institute of Standards and Technology (“NIST”) and other federal organizations done in the past ten years since the National Academy of Sciences Committee on Identifying the Needs of the Forensic Sciences Community released its report, *Strengthening Forensic Science in the United States*?<sup>1</sup> I know exactly where I was ten years ago, on February 16, 2009, because the American Academy of Forensic Sciences holds its meetings every year in February.<sup>2</sup> During its 2009 annual meeting, the tension among all participants was at the roof: “Have you seen the Report?” “Did you see a copy of the Report?” “When is the Report coming out?” “What is the Report saying?” It was hard to pay attention to the educational offerings provided at the meeting: “Did they get a ding on their cell phone? Was it released?”

A copy of the Report *was* released that week, and it was as if everything stopped. People started putting the meeting aside just to read the Report. Thank goodness there was an executive summary (since, after all, the entire Report is 352 pages long). When we read the Report (and I know because I was pulled into several sidebars during the meeting) many people were upset. Some scientists responded to the report saying, “This is my profession, you just dissed me; I’m not going any further on it.” I kind of felt the same way, having devoted my life to this profession. After the initial shock, a lot of people kind of shook their heads, sat down, and said, “Okay, let’s really look at

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1. COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCI. CMTY., NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD* (2009), <https://www.nap.edu/read/12589/chapter/2> [<https://perma.cc/JG6Y-X8SN>] [hereinafter *STRENGTHENING FORENSIC SCIENCE*].

2. *Future & Past AAFS Meetings*, AM. ACAD. FORENSIC SCI., <https://www.aafs.org/home-page/meetings/future-past-aafs-meetings> [<https://perma.cc/NJ7S-UV38>].

what this Report says.”

I read the Report with the perspective of a program manager at NIST, specifically, one who managed the forensic science program. I wondered what the Report meant for the projects that NIST already had in place. Thirteen overall recommendations were part of the Report.<sup>3</sup> Some of the recommendations directly affected what was going on at NIST, such as, first, conducting research to conform scientific bases and the validity of utilized methods<sup>4</sup>; second, establishing processes to apply uncertainty measurements to conclusions<sup>5</sup>; third, developing tools to improve the application of metrology, validation, proficiency testing, and the exchange of information<sup>6</sup>; and fourth, establishing standards for automated fingerprint identification systems to allow interoperability among systems.<sup>7</sup> Those four central recommendations were already high priorities at NIST.

Prior to 2009, I developed expertise from the bench—I worked in a lab for 18 years—and I worked as part of several scientific working groups. The FBI and the National Institute of Justice assembled working groups for each forensic discipline. We had, for example, SWGDRUG, which was a Scientific Working Group for the Analysis of Seized Drugs<sup>8</sup>; SWGDE, a Scientific Working Group for Digital Evidence<sup>9</sup>; and SWGFAST, the Scientific Working Group on Friction Ridge Analysis, Study and Technology.<sup>10</sup> All of these groups came together because practitioners realized that, to unify the profession across the states, they needed to work on documenting their work for utilization in the laboratory.

These working groups—I was part of four of them—helped to focus the research at NIST. For example, trace evidence needed a

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3. STRENGTHENING FORENSIC SCIENCE, *supra* note 1, at 19–33.

4. *See id.* at 22 (calling for “[s]tudies establishing the scientific bases demonstrating the validity of forensic methods”).

5. *See id.* at 23 (calling for the development of “quantifiable measures of uncertainty in the conclusions of forensic analyses”).

6. *Id.* (calling for the establishment of “standard terminology” for use in forensic science investigations).

7. *See id.* at 31 (calling for development of “standards for representing and communicating image and minutiae data among Automated Fingerprint Identification Systems”).

8. SCI. WORKING GRP. FOR THE ANALYSIS OF SEIZED DRUGS, <http://www.swgdrug.org> [<https://perma.cc/4EBN-EX52>].

9. SCI. WORKING GRP. ON DIG. EVIDENCE, <https://www.swgde.org> [<https://perma.cc/G4QF-D8VH>].

10. SCI. WORKING GRP. ON FRICTION RIDGE ANALYSIS, STUDY & TECH., <http://clpex.com/swgfast/> [<https://perma.cc/AW7R-ZQLL>].

standard for the analysis of glass. We brought together researchers at NIST to work on creating a new material standard so that instrumentation could be properly calibrated. DNA took off; we knew we had to create standards for DNA right at the beginning to keep that new discipline on target. Other disciplines already existed, and we tried to provide them with standards. NIST was called in to examine the possibilities for a national firearms database—to ask whether it would be possible to take metal measurements from newly-minted guns and put that type of stria information into a database.

When the 2009 Report came out and the Committee offered its 13 recommendations, we started to change our focus. We already had a lot of deep-seated information and knowledge based in DNA, ballistics, digital evidence, and statistics. What I did was create core groups in those areas, labeled focus areas. I tasked the focus areas with hitting the hard problems, not just the ones we could already answer. This work can take time. My first standard took eight years to finalize.

What was the most positive development that came out of the Report in my view? Congress began to provide more funding for forensics research. Grant applications emphasized that new work was being conducted in response to the Report. At NIST, we were able to get additional funds to start promoting projects.

NIST took on new topics, such as human factors. At another American Academy meeting, Itiel Dror, a cognitive neuroscientist, gave one of the primary talks. The ballroom was packed, not because people thought the Report's findings really applied to forensic science, but because attendees were interested in hearing why Itiel thought the findings applied to forensic science. They all sat there listening to Itiel, thinking, "I'm a scientist. I'm at the bench. I get evidence. I use scientific foundational information to apply to that evidence. And I issue my report. Where is the bias?" It took Itiel several visits back to the American Academy before people began to realize that just reading the submission report to your laboratory can introduce law enforcement bias into the lab.<sup>11</sup> What NIST did in response was to start pulling working groups together. We learned about other professions that had cognitive bias issues such as the medical and aviation professions, though if a surgery goes wrong or a plane crashes, you know when bias hits you. In forensic science, however, you may never know if your bias has an effect on the evidence.

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11. See *2018 Annual Meeting Highlight Videos Available*, AM. ACAD. FORENSIC SCI., <https://news.aafs.org/aafs-news/2018-annual-meeting-highlight-videos-available> [<https://perma.cc/9WQ5-EYVM>], for a video of one of Dror's presentations.

At NIST, with funding from the National Institute of Justice, researchers published a report titled *Latent Print Examination and Human factors: Improving the Process through a Systems Approach*.<sup>12</sup> In response to that publication, the FBI changed their procedures, thus altering the way latent prints were handled and the way results were reported. Because the FBI took this step, other agencies followed suit and changed their protocols. NIST then moved into Questioned Documents, and that report is almost done. We received additional funding from NIJ to continue the human factors working group in firearms and DNA mixtures.

In 2012, NIST, with the Department of Justice through a memorandum of understanding, created the National Commission on Forensic Science.<sup>13</sup> And in 2013, the Commission held its first meeting. The Commission was called to respond to the Report's call for scientific rigor. For the next four years, the Commission worked and considered public input. To allow researchers to stay abreast of what was going on in the Commission, its meetings were videotaped—you were able to watch the recordings in video-webcast. Several recommendations from the Commission were acted on by the Attorney General.<sup>14</sup>

NIST also understood, because of the volume of information in the Report, that the agency could not respond to each of these research needs on its own. This resulted in the establishment of the NIST Forensic Science Center of Excellence, the Center for Statistics and Applications in Forensic Evidence (“CSAFE”).<sup>15</sup> CSAFE has expanded its research into the application of probabilistic statistics to pattern and digital evidence.

Ten years later, the profession still faces significant challenges. Some practitioners still do not believe the Report got it right, and they refuse to listen to anything that is associated with it. However, there is no denying that a considerable amount of work has been done in the

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12. NAT'L INST. OF STANDARDS & TECH. & NAT'L INST. OF JUSTICE, LATENT PRINT EXAMINATION AND HUMAN FACTORS: IMPROVING THE PRACTICE THROUGH A SYSTEMS APPROACH (2012), [https://ws680.nist.gov/publication/get\\_pdf.cfm?pub\\_id=910745](https://ws680.nist.gov/publication/get_pdf.cfm?pub_id=910745) [<https://perma.cc/MM9P-NA98>].

13. See *National Commission on Forensic Science*, U.S. DEP'T. OF JUSTICE, <https://www.justice.gov/archives/ncfs> [<https://perma.cc/E7R4-6QMH>], for documents produced by the Commission.

14. See NAT'L COMM'N ON FORENSIC SCI., REFLECTING BACK—LOOKING TOWARD THE FUTURE (2017), <https://www.justice.gov/archives/ncfs/page/file/959356/download> [<https://perma.cc/P4DN-8B4D>], for an overview of the Commission's accomplishments.

15. See generally *Center for Statistics and Applications in Forensic Evidence*, NAT'L INST. STANDARDS & TECH., <https://forensicstats.org> [<https://perma.cc/9ADL-SVRC>].

past ten years since the release of the Report. The research exploration into new territory has provided a different view on established beliefs, which have changed people's perspectives, laboratory procedures, and judicial processes. In short, ten years later, we are strengthening forensic science in the United States.