Conference Themes

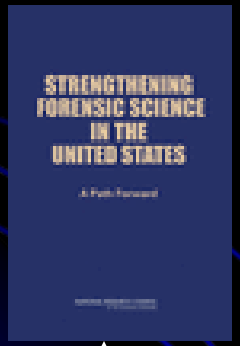
DH Kaye
ASU College of Law
School of Life Sciences
www.law.asu.edu/kaye

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

National Academies

- Nat'l Academy of Sciences (1863)
- Nat'l Academy of Engineering (1964)
- Institute of Medicine (1970)
- National Research Council (1916)



In the Media

- Crime Labs Are Seriously Deficient, Report Says: National Academy of Science Says Only DNA Evidence Is Dependable – Pete Williams, *NBC News*
- Crime Labs and Dismal Science – NPR, On Point
- Crime Labs in Disarray Nationally; Reform, Independence Needed, Report Says – *A.B.A.J. L. News Now*
- Clueless 'Science' – Jennifer Mnookin, *L.A. Times*

NRC Reports

Mixed record of impact

Committee on Medical Legal Problems, The Coroner and the Medical Examiner (1928)

- Coroners, “an anachronistic institution,” should be replaced with medical examiners
- More than half the states still have coroners offices

Committee on Evaluation of Sound Spectrograms, On the Theory and Practice of Voice Identification (1979)

- "[T]he assumption that intraspeaker variability is less than . . . interspeaker variability . . . is not adequately supported by scientific theory and data"
- Limited impact on the admissibility of "voice prints"

Committee on Ballistic Acoustics, Report (1982)

- Rejected the conclusion of a House Select Committee on Assassinations that "scientific acoustical evidence [a tape recording] establishes a high probability that two gunman fired at President John F. Kennedy" (the "grassy knoll" theory)
- No broader implications or policy recommendations

Committee on DNA Technology in Forensic Science, DNA Technology in Forensic Science (1992)

- A DNA Advisory Board outside of law enforcement should review developments and promulgate standards
- Certification, accreditation, proficiency testing
- Congress required the FBI to appoint an external advisory board
- Other recommendations tended to be lost in the clamor over the “ceiling principle” for computing random-match probabilities

Committee on DNA Technology in Forensic Science: An Update, The Evaluation of Forensic DNA Evidence (1996)

- Reiterated many of the 1992 recommendations on QC and QA
- But focused on population genetics and statistical issues

Committee to Review the Scientific Evidence on the Polygraph, The Polygraph and Lie Detection (2003)

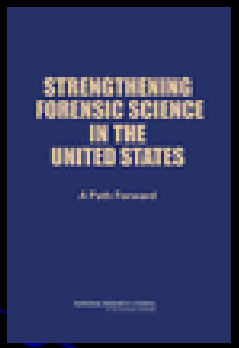
- Pointed to “the limitations of the quality of the empirical research and the limited ability to generalize to real world settings”
- “accuracy in distinguishing actual or potential security violators from innocent test takers is insufficient to justify reliance on its use in employee security screening in federal agencies”
- And what did the government do?

Committee on Scientific Assessment of Bullet Lead Elemental Composition Comparison, Forensic Analysis: Weighing Bullet Lead Evidence (2004)

- Prompted the FBI to discontinue compositional analysis of bullet lead
- For critical reviews, see the conference materials; see also Paul Giannelli (a committee member who is speaking later)

Committee to Assess the Feasibility, Accuracy, and Technical Capability of a National Ballistics Database, Ballistic Imaging (2008)

- Includes a short discussion of “ballistics” evidence



- Committee on Identifying the Needs of the Forensic Science Community, Strengthening Forensic Science in the United States: A Path Forward (2009)

“Long Anticipated Report”

- Originally schedule: January 2008
- Update 2-7-08: A report will be issued at the end of the project in Summer, 2008.
- Update 10-29-08: The project duration has been extended. The report is expected to be issued by February 2009.
- Update 1-22-09: The report is expected to be issued in mid to late February 2009.

Membership

- Federal judge, lawyer, lawyer-psychologist, law professors (2)
- Biostatistician, statistician
- Chemist, chemical engineer
- Computer scientist
- Medical examiners (2), crime laboratory director, forensic biologist, forensic chemists (2)

Recommendation 1: NIFS

- To promote the development of forensic science into a mature field of multidisciplinary research and practice, founded on the systematic collection and analysis of relevant data, Congress should establish … an independent federal entity, the National Institute of Forensic Science (NIFS). NIFS should have a full-time administrator and an advisory board with expertise in research and education, the forensic science disciplines, physical and life sciences, forensic pathology, engineering, information technology, measurements and standards, testing and evaluation, law, national security, and public policy. …

Recommendation 3: Research

- Research is needed to address issues of accuracy, reliability, and validity in the forensic science disciplines. … NIFS should competitively fund peer-reviewed research in the following areas:
- (a) Studies establishing the scientific bases demonstrating the validity of forensic methods.
- (b) The development and establishment of quantifiable measures of the reliability and accuracy of forensic analyses. Studies of the reliability and accuracy of forensic techniques should reflect actual practice on realistic case scenarios, averaged across a representative sample of forensic scientists and laboratories. Studies also should establish the limits of reliability and accuracy that analytic methods can be expected to achieve as the conditions of forensic evidence vary. The research by which measures of reliability and accuracy are determined should be peer reviewed and published in respected scientific journals.
- (c) The development of quantifiable measures of uncertainty in the conclusions of forensic analyses.
- (d) Automated techniques capable of enhancing forensic technologies.

Recommendation 5: Errors

- NIFS should encourage research programs on human observer bias and sources of human error in forensic examinations. ... In addition, research … should … quantify and characterize the amount of error. ... NIFS should develop standard operating procedures … to minimize, to the greatest extent reasonably possible, potential bias and sources of human error in forensic practice. ...

Recommendation 2: Terminology

- NIFS … should establish standard terminology to be used in reporting on and testifying about the results of forensic science investigations. Similarly, it should establish model laboratory reports … and specify the minimum information that should be included. As part of the accreditation and certification processes, laboratories and forensic scientists should be required to utilize model laboratory reports … .

Discussion: Standardized Terminology and Reporting

- The terminology used in reporting and testifying … must be standardized. Many terms are used by forensic scientists in scientific reports and in court testimony that describe findings, conclusions, and degrees of association between evidentiary material (e.g., hairs, fingerprints, fibers) and particular people or objects. Such terms include, but are not limited to "match," "consistent with," "identical," "similar in all respects tested," and "cannot be excluded as the source of." The use of such terms can and does have a profound effect on how the trier of fact in a criminal or civil matter perceives and evaluates scientific evidence.
- Ironically, no research is cited.

Recommendation 4: Siting

- To improve the scientific bases of forensic science examinations and to maximize independence from or autonomy within the law enforcement community, Congress should authorize and appropriate incentive funds to NIFS … for … removing all public forensic laboratories and facilities from the administrative control of law enforcement agencies or prosecutors' offices.

Recommendation 8: QA & QC

- Forensic laboratories should establish routine quality assurance and quality control procedures to ensure the accuracy of forensic analyses and the work of forensic practitioners. Quality control procedures should be designed to identify mistakes, fraud, and bias; confirm the continued validity and reliability of standard operating procedures and protocols; ensure that best practices are being followed; and correct procedures and protocols that are found to need improvement.

Recommendation 9: Code

- NIFS … should establish a national code of ethics for all forensic science disciplines and encourage individual societies to incorporate this national code as part of their professional code of ethics. Additionally, NIFS should explore mechanisms of enforcement for those forensic scientists who commit serious ethical violations. Such a code could be enforced through a certification process for forensic scientists.

Recommendation 10: Education

- graduate studies in multidisciplinary fields critical to forensic science practice
- attractive scholarship and fellowship offerings.
- support law school administrators and judicial education organizations in establishing continuing legal education programs for law students, practitioners, and judges.

Recommendation 11: Death Investigations

- (a) funds to … establish medical examiner systems to replace] existing coroner systems. …
- (b) to support research, education, and training in forensic pathology …
- (c) Scientific Working Group (SWG) for forensic pathology and medicolegal death investigation [to] develop and promote standards for best practices … .
- (d) All medical examiner offices should be accredited … .
- (e) All federal funding should be restricted to accredited offices that meet NIFS-endorsed standards or that demonstrate significant and measurable progress in achieving accreditation within prescribed deadlines.
- (f) All medicolegal autopsies should be performed or supervised by a board-certified forensic pathologist. …

One Response: ASCLD

- First and foremost, laboratory directors and managers need to prepare their staff for … questions from attorneys in the courtroom. Laboratory directors and managers need to properly educate staff so they are prepared to address these concerns when raised in the courtroom.
- The forensic science community can expect an intense focus on the science behind what we do. There has been recent debate addressing some of the long-standing disciplines of forensic science – in particular fingerprints, firearms and questioned documents. [W]e must identify and take the steps necessary to prove the existence of valid, reliable science and interpretations behind the forensic analysis.

The problem is “perception”?

- Paradigm shifts at all levels in the laboratory will be necessary to embrace the needed changes which will preserve and improve our profession. Many crime laboratories across the United States have robust, validated methods, and are confident of the science behind the work they do. This documentation may not be readily available in some laboratories or the published literature, leading to a perception that the science behind some types of disciplines is lacking. Changing that perception can only be accomplished through engagement, collaboration and healthy debate and not by defensive and dismissive postures or positions.

Implications for Trials and Appeals

Themes

- In view of the issues being pressed by the two academies--
  - What should the forensic science community do?
  - What should the courts do?
  - What should the government do?