National Commission on Forensic Science

Reflecting Back—
Looking Toward the Future

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In 2013, the National Commission on Forensic Science[1] (NCFS or Commission) was created as a federal advisory committee to the U.S. Department of Justice (DOJ) as part of a memorandum of understanding between DOJ and the National Institute of Standards and Technology (NIST).[2] As the second term of the Commission's charter comes to a close, this document reflects on the work that has been accomplished and provides guidance on the work that remains unfinished. It is not designed to comment on the forum in which this remaining work occurs but to highlight issues that those involved in the Commission did not have time to address during the Commission's first two terms.

The first section briefly describes the Commission's structure, including the Charter, membership, subcommittees, and work products organized in three key categories: Foundational, Operational, and Relational. The second section describes work that the Commission believes needs to be address going forward.

I. A LOOK BACK

> ***In his 1963 Letter from Birmingham Jail, Rev. Martin Luther King, Jr., reminded us that "Injustice anywhere is a threat to justice everywhere." 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 better for it. I sincerely, hope that the work of this Commission will push us closer to this goal.*** – Judge Harry Edwards[3]

It was with these words that Judge Harry Edwards ended his speech, *Reflections on the Findings of the National Academy of Sciences Committee on Identifying the Needs of the Forensic Science Community*, at the first NCFS meeting on February 3, 2014, passing the torch in forensic reform from the National Academy of Sciences (NAS) to the Commission. For the ensuing 3 years, this Federal Advisory Committee has responded to the National Academy's call to strengthen forensic science with concrete recommendations and views to assure good science serves justice.

The NCFS Charter

The Commission's mission is to "enhance the practice and improve the reliability of forensic science."[4] The Commission's Charter outlines the objectives and scope of activities as well as a description of duties to achieve its mission.

Objectives and Scope of Activities

The objectives and scope directed the Commission to provide recommendations and advice to DOJ concerning national methods and strategies for:

[1] U.S. Department of Justice. (n.d.) National Commission on Forensic Science home page. See https://www.justice.gov/ncfs

[2] This memorandum of understanding (MOU) also created the Organization for Scientific Area Committees (OSAC), which focuses on improving forensic science practice through supporting documentary standards development; the Commission is focused more toward policy issues. The MOU can be found at: https://www.justice.gov/ncfs

[3] U.S. Department of Justice. (n.d.) National Commission on Forensic Science, Meeting One, *National Academy of Sciences Report Executive Summary.* Retrieved from https://www.justice.gov/sites/default/files/ncfs/legacy/2014/05/13/harry-edwards.pdf

[4] U.S. Department of Justice. (n.d.) National Commission on Forensic Science home page. Retrieved from https://www.justice.gov/ncfs

1. Strengthening the validity and reliability of the forensic sciences (including medico-legal death investigation);
2. Enhancing quality assurance and quality control in forensic science laboratories and units;
3. Identifying and recommending scientific guidance and protocols for evidence seizure, testing, analysis, and reporting by forensic science laboratories and units; and
4. Identifying and assessing other needs of the forensic science communities to strengthen their disciplines and meet the increasing demands generated by the criminal and civil justice systems at all levels of government.[5]

Description of Duties

These objectives were subdivided into six categories in the Charter's description of duties.

A. To recommend priorities for standards development to the Attorney General;
B. To review and recommend that the Attorney General endorse guidance identified or developed by subject-matter experts;
C. To develop proposed guidance concerning the intersection of forensic science and the courtroom;
D. To develop policy recommendations, including a uniform code of professional responsibility and minimum requirements for training, accreditation and/or certification;
E. To consider the recommendations of the National Science and Technology Council's Subcommittee on Forensic Science;
F. To identify and assess the current and future needs of the forensic sciences to strengthen their disciplines and meet growing demands."[6]

Commission Membership and Subcommittees

The makeup of the Commission brought experience from forensic practitioners, scientists, lawyers, and judges as well as advocacy groups. DOJ and NIST gave careful consideration to geographic diversity, subject matter expertise, and relevant experience from federal and state jurisdictions in the selection of Commission members. Currently, 40 Commissioners serve on the Commission.[7] The Commission developed subcommittees whose members draft recommendation and views focusing on their specific target areas: Interim Solutions, Accreditation and Proficiency Testing, Human Factors, Medicolegal Death Investigation, Reporting and Testimony, Training on Science and the Law, and Scientific Inquiry and Research.[8] In addition to allowing the exchange of ideas among Commissioners, the subcommittees also create a robust system for public engagement.

Although the Commission's Charter says its objectives and scope of activities are to advise DOJ on forensic issues, the Charter also directs the Commission to identify and assess the needs of the forensic science communities, as outlined in Objective four, above. Given the foundational diversity of the Commission itself and the fact that the vast majority of forensic-related analysis litigation occurs in state and local jurisdictions, all Commission work has been constructed with the hope of providing leadership

[5] U.S. Department of Justice. (n.d.) National Commission on Forensic Science, *Charter, U.S. Department of Justice, National Commission on Forensic Science*. Retrieved from https://www.justice.gov/ncfs/file/624216/download

[6] Ibid.

[7] See Appendix A for the Commissioners' biographies.

[8] For more information about the structure of NCFS, see Appendix B for the subcommittee descriptions and membership.

from the federal government and guidance to "enhance the practice and improve the reliability of forensic science" in all jurisdictions throughout the United States.[9]

As Patrick D. Gallagher, then NIST Director and Commission Co-Chair, noted at the first Commission meeting, the work of the Commission has been like "building a plane in midair." The structure, process, members, and subject matter focus have evolved since that first meeting. Changes included the expansion of the Commission's review to consider digital evidence, the creation of a more formalized process for the review and adoption of work products, revision of the Commission bylaws, and the addition or deletion of certain subcommittees.

Work Products

The Commission has adopted 39 work products as of Meeting 11: 18 Recommendation documents and 21 Views documents. Recommendation documents propose specific acts to the U.S. Attorney General and describe actions for his or her consideration and implementation within the federal system. Views documents represent the collective views of the Commissioners and do not request specific action by the Attorney General. Views documents are designed to comment generally on particular subjects and serve as guidance for all forensic and criminal justice communities, whether federal, state, or local.

The Commission focused and prioritized its work in large part on the four objectives outlined in the Charter (see list, above). All work products can be grouped into three broad categories: Foundational, Operational, and Relational.

Foundational Work Products

Foundational work products explore the discipline of forensic science generally and fulfill the Commission's Objective 1, "strengthening the validity and reliability of forensic evidence." Through these work products, the Commission has sought to accomplish its mission in three ways: strengthening the scientific basis and research standards for forensic science, assessing how forensic science is currently used and understood by the community, and understanding the community's potential to produce high-quality forensic evidence. The Commission believes that the implementation of these practices will assist in assuring that forensic evidence is based on valid scientific research and that forensic science is used effectively and accurately.

As of [January 2017], the Commission has adopted [5 Recommendations] and [5 Views] documents in the Foundational category (see Appendix C).

Operational Work Products

Operational work products address management and laboratory systems practicing forensic science and fulfill the Commission's Objective 2, "enhancing quality assurance and quality control in forensic science laboratories and units" as well as the medicolegal death investigation (MDI) systems[10] in the United States. The Commission's operational work products can be categorized into those discussing general laboratory and forensic science practices and those focusing on the improvement of MDI systems. Operational work products seek to achieve several goals: implementing professional standards across the practice of forensic science by encouraging broad accreditation of forensic science service providers (FSSPs) and certification of practitioners; implementing quality-control mechanisms to ensure reproducible forensic techniques are utilized; creating a culture of learning from mistakes with a robust

[9] This broader mission is evidenced by the inclusion of medicolegal death investigation, which occurs almost exclusively outside of the federal system.

[10] This term refers to the medical examiner and coroner systems existing in the United States as well as the investigation units that support these systems.

process (root cause analysis); and increasing capacity and improving infrastructure between the forensic practitioner and law enforcement communities (through system interoperability, communication networks between medical examiner and coroner offices, and the National Disaster Call Center).

As of [January 2017], the Commission has adopted [10 Recommendations] documents and [10 Views] documents in the Operational category (see Appendix C).

Relational Work Products

Relational work products analyze the way forensic science is understood and communicated to the users of forensic science, including investigators, lawyers, judges, victims, defendants, and the general public. Many of these work products arose from the Commission's Objective 3 for "identifying and recommend[ing] scientific guidance and protocols for evidence seizure, testing, analysis, and reporting by forensic science laboratories and units"[11] as well as one of its express duties, "to develop proposed guidance concerning the intersection of forensic science and the courtroom." from Duty C (see list above). The Commission's relational work products address the language used within the forensic community and expert testimony to discuss forensic findings and recommend practices by which judges and attorneys can interact with forensic evidence and forensic experts in the courtroom.

As of [January 2017], the Commission has adopted [3 Recommendations] documents and [6 Views] documents in the Relational category (see Appendix C).

II. LOOKING TO THE FUTURE

This brings us to the next steps, which in many ways may be more difficult than those the Commission has already taken. Much of its work has been looking for ways to improve quality assurance within laboratories; generate more research in areas identified by the National Research Council 2009 report, *Strengthening Forensic Science in the United States, a Path Forward;* and determine how to move forward in creating a more robust research culture supporting the practical application of forensic science in the courtroom. The Commission also focused on issues of laboratory management, oversight, and accreditation as well as examiner certification, and documenting and reporting analysis results. While the Commission has made significant progress in these areas, what remains is even more challenging, with broad-reaching implications and complexity in the manner in which they impact the criminal justice system as a whole.

Topics that were not explored and should be evaluated by the Commission or other groups willing to take on these important tasks can be grouped into the three broad categories mentioned in the first section of this report—Foundational, Operational, and Relational—mirroring the four objectives identified in the Commission's Charter.

A. Foundational

Much of the work of the Commission was directed in trying to strengthen the foundational underpinnings of forensic disciplines by calling for additional research and a review of the current literature. The Commission believes that the following four foundational areas have not been completed:

1. Undertake a survey of law enforcement agencies conducting forensic science analysis.

Although the Commission was focused on drafting recommendations for the federal government and DOJ forensic laboratories, the Commission also recognized early on that the number and diversity of entities at

[11] This term is broadly defined to include both those that provide forensic sciences services and the consumers of such services.

the state, local, and federal level relying on each other and providing forensic services to the criminal justice system was not fully understood. For example, state and local agencies frequently utilize the expertise and services of federal laboratories, while conversely, the federal prosecutors have utilized services of local examiners in lieu of federal laboratories. However, Commission recommendations adopted by DOJ are not binding on non-DOJ laboratories. Additionally, information sharing across jurisdictions is often necessary. This is particularly the case as databases, such as DNA, fingerprinting, pornography, shoe prints, and the like, are increasingly relied upon by agencies at all levels. Interoperability needs to be considered.

The Commission believes that a better understanding of what types of law enforcement agencies are providing forensic services and what these services are is essential to addressing many of these questions. Some of this information may have been gathered by different organizations, but a survey focused on answering these questions has not been completed. Opportunities for doing so should continue to be a priority.

2. Develop policy recommendations, including a uniform code of professional responsibility and the implementation of a national code of ethics.

The Commission recommended a national code of ethics and professional responsibility for forensic science and forensic medicine service providers (FSSPs/FMSPs). A revised version of what was passed by the Commission was adopted by DOJ to be used in federal laboratories.

However, there are still substantial questions about how broadly such a code should or could apply and how (or even if) enforcement mechanisms should be implemented. Is there a need for a national board of professional responsibility? What can or should the accrediting bodies do to move this forward? Is there an interplay between certification of examiners and a national code? These and many other questions remain unexplored and unanswered.

3. Address digital forensics.

When the Commission began its work, digital evidence was specifically excluded from its scope. This was later amended to allow the Commission to consider digital forensics. What became obvious right from the beginning is that the challenges facing digital forensics are in some ways unique. This area of practice is fast paced, often done in law enforcement settings by technicians rather than scientists, and has security issues that may not be present in other areas of forensics. Digital forensics, as a fairly new yet pervasive area of forensic science, can be built from the ground up with the guidance of the Commission or similar group to address quality assurance, foundational reliability, evidence preservation, and more. This entire area of forensic science needs additional study, and the U.S. Attorney General as well as the federal government could benefit from further advice in these areas.

B. Operational

1. Provide guidance on evidence preservation and retention.

There has been some guidance by other organizations concerning biological evidence preservation. However, this is a complex area, and more work is needed in the scope and methodologies necessary for biological evidence preservation as well as other kinds of evidence preservation (e.g., digital evidence). What can and should be done with evidence that may have forensic value in the future, utilizing a variety of legal proceedings, such as trial, post-conviction, or other forums? What are the legal consequences of granting access to evidence to people other than officers of the court, such as crime victims and victims' families, so that they can do additional forensic testing? Guidance is needed for the forensic testing of

cold case evidence, particularly when advances in testing may make re-evaluation worthwhile, and for the re-testing of evidence in a case that has been previously litigated. Are there, or should there be, ways that victims can pay for private testing of untested evidence when their interest in answers continues beyond the criminal justice system's interest in pursuing the case? What is the status of state legislation/requirements/practices regarding evidence testing and destruction? Are there practices in place in state jurisdictions that should or could be adopted federally? Are there, or should there be, guidelines for evidence handling by defense experts, court personnel, and even jurors to ensure ongoing preservation of biological evidence on items of evidence in a trial?

2. Consider examiner certification: is this feasible, and should this be a requirement for federal examiners?

The Commission has weighed in on certification and expressed its view that FSSPs should be encouraged to certify practitioners. There was exploration as to the cost, accessibility, and training issues surrounding certification. The Commission did not fully address this issue, and additional exploration is needed.

3. Address source code accessibility and commercial transparency.

As forensic analysis evolves, the role of computers in forensic analysis has also grown. These technologies have led to questions about discovery of closed-source software programs used to generate the analysis or used as part of commercially available instruments during forensic analysis. Should source code be available to prosecution and defense for analysis? Should the federal government have policies about using open-source or closed-source instrumentation in their laboratories? If access is allowed, what guidance should be given in relation to access? Are protective orders appropriate?

4. Consider recommendations for how to address human factors issues in medico-legal death investigations especially around cases involving child death, in-custody death, and police shootings.

Human factors such as implicit, cognitive, and implied bias can and are being addressed in forensic science disciplines. In particular, Medico-legal death investigation (MDI) presents unique issues and challenges related to human factors. When cases are high profile or involve issues of great public interest, these factors may be magnified. Examining and exploring these human factors and how they impact these kinds of cases could lead to great insight in all MDI.

C. Relational

1. Train forensic science users—law enforcement, lawyers, judges, and the public.

The Training on Science and the Law subcommittee was one of the first subcommittees created by the Commission; it was charged with the task of looking at training lawyers and judges on forensic science. What became clear over time was that this training was important, but this work could wait until after issues surrounding foundational reliability and laboratory operational reforms were addressed. As a result, the Commission made only a general recommendation that a forensic science curriculum should be developed. Many questions remain. What does this curriculum look like, who is to implement such a curriculum, and what funding and resources are needed for curriculum development and distribution to accomplish this goal? Lawyers need guidance on who should determine when something is foundationally sound: When is forensic analysis sound enough to be used as a forensic tool or an "investigative lead," and when is it robust enough to be admissible? Are these concepts, or should these concepts, be distinguishable? Judges and lawyers alike need to understand the differences between presumptive and confirmatory testing, and they require better guidance on how to assess and evaluate

admissibility. The subcommittee did mention that there is a need for education among the general public, but no further action was taken.

2. Make recommendations for how autopsy findings regarding cause and manner of death might be presented to the fact finders (whether in investigation or adjudication phases of a case).

The Commission's MDI subcommittee put forth several recommendations to improve the country's coroner/medical examiner system. Recommendations regarding the more relational aspects of those involved in MDI, the fact finder, and the public could use additional exploration. Considering how "cause" and "manner" of death findings are presented and understood could lead to improved communication between these organizations.

3. Establish key principles of a defendant/victim notification process.

The Commission adopted a Recommendation on Root Cause Analysis that makes a policy recommendation for the adoption of root cause analysis protocols for all FSSPs and FSMPs. Additionally, the Commission adopted a model code of professional responsibility, which in part requires to "appropriately inform affective recipients (either directly or through proper management channels) of all nonconformities or breaches of law or professional standards that adversely affect a previously issued report or testimony and make reasonable efforts to inform all relevant stakeholders, including affected professional and legal parties, victim(s) and defendant(s)." How to identify those 'adversely affected?' What processes can or should be used to do so? Who should be involved in this process? Who is responsible for notification? Can there be systems developed to ensure that today's victims and defendants can be reached—if necessary—decades later? Should there be a model process developed for notice of affected professionals and legal parties, victims, and defendants? There are individual cases around the country that serve as examples of how this might be done, but discussion, debate, and serious consideration as to how to most effectively implement such a process needs more work.

4. Establish research-based means of effectively and accurately communicating forensic science information with the judicial system and the public.

As previously mentioned, some of the Commission's work focused on the nexus between the laboratory and the courtroom and considered how information can be effectively and accurately communicated to those within the legal system as well as to the jury. Recommendations included discontinuing some terminology. The Commission reached general consensus that language in reports and testimony should not be misleading to the fact finder. Exploring and establishing research-based means of effectively and accurately communicating forensic science information as well as the statement below regarding focusing on communication issues focus on how to solve problems caused by the lack of forensic-related knowledge of those in the judicial system: judges, lawyers, and juries.

Considering how the existing social science research on juries, and/or whether additional social science research on how particular terminology and/or statistical statements are understood by the fact finder could lead to more precision and a better understanding by the investigators, lawyers, judges, and the general public. Questions include: what is the most effective way to communicate forensic science concepts to the trier of fact? Are comparative statements or statistical statements more or less helpful to the fact finder? Although the Commission looked at the use of some of these research models, questions remain about how such statements are understood by the fact finder.

5. Focus on issues with communication and understanding between forensic analysts, investigators, lawyers, judges, juries, and the public.

The Commission should consider recommending training judges and attorneys on the forensic-related information that is used in the courtroom. Many issues arise when the legal community does not understand the terms, techniques, and conclusions that forensic experts present in court. For example, judges and attorneys should be trained on how to address laboratory assessments, such as inconclusive. The same is true regarding the use of presumptive testing as opposed to confirmatory testing in court cases. Do lawyers, judges, and law enforcement personnel know the difference between these types of testing? Would they know the best form of testing to develop an investigatory lead? Should they receive guidance for legislation or rules of evidence to address presumptive testing? How would this knowledge come to play when a preliminary breath testing is done roadside, which is often not admissible to prove a DUI, compared with the use of an Intoxilizer or DataMaster breath test done for evidentiary purposes. Is there other forensic testing that should be treated similarly? The Commission should continue to examine this communication and knowledge gap and its effect on courtroom proceedings.

CONCLUSION

The National Commission on Forensic Science has provided an essential forum for the exchange of information and discussion on public policy to improve the forensic sciences. This organization's diversity in subject matter experts, interests, perspectives, and geographic and jurisdictional representation has generated rich discussion about issues facing the forensic science community and the criminal justice community as well as the public. The solicitation of public comments for subcommittees' draft work products allowed participation by any interested person or organization and provided the Commission with access to a range of opinions. But there is still work to be done.

Criminal justice is a high-stakes endeavor. As in health care or aviation, errors at any stage of the process can have devastating consequences to victims, suspects, and the public. Decisions made as a result of forensic evidence have a direct and permanent impact on citizens' lives. Because of this, the U.S. criminal justice system strives for excellence. But getting to the right result requires not only excellence in all phases of the process but also the public's trust.

Creating excellence is an ongoing effort. Scientific understanding and technology are constantly changing. Like health care and aviation, the field of forensic science will have to adapt and its practitioners will need to be forever vigilant. But there are special challenges for forensics, as it serves an adversary system. There is often little room for adversaries to reflect on policy issues that impact all stakeholders, let alone to reflect on system-wide adjustments to accommodate changes in scientific understanding and technology. This challenge is answered in part by the existence of a forum such as the Commission; a forum that generates an open dialog among stakeholders, scientists, the public, and DOJ.

To have a forum such as the National Commission on Forensic Science in such a complex system has been a great asset over the past several years. It has assisted in moving forensic science forward; but to continue this path forward, the Commission needs to further explore and address the questions outlined above as well as other possible issues that have not been considered yet. The current members of the Commission recommend that the incoming administration continue this Federal Advisory Committee to tackle these tasks.