RE: Conference Call - Rule 16 Subcommittee - March 27 - 2:30 PM EST

From: "Shapiro, Elizabeth (CIV)" <(b) (6)>
To: "Wroblewski, Jonathan (CRM)" <(b) (6)>, "Goldsmith, Andrew (ODAG)" <(b) (6)>, "Driscoll, Kevin (CRM)" <(b) (6)>, "Stemler, Patty (CRM)" <(b) (6)>
Cc: "Antell, Kira M. (OLP)" <(b) (6)>, "Hunt, Ted (ODAG)" <(b) (6)>
Date: Wed, 14 Mar 2018 17:11:03 -0400
Attachments: 17-cr-b-suggestion_rakoff-4.pdf (1.8 MB); ATT00001.htm (216 bytes); 17-cr-d-suggestion_grimm-1.pdf (157.82 kB); ATT00002.htm (216 bytes); Rule 16 memo discovery experts 3 14 2018 FINAL.PDF (146.43 kB)

Adding Kira and Ted, since this goes to the forensics/702 issue and gets ahead of where the evidence committee is.

From: Wroblewski, Jonathan (CRM)
Sent: Wednesday, March 14, 2018 4:35 PM
To Goldsmith, Andrew (ODAG) (b) (6); Driscoll, Kevin (CRM) (b) (6); Stemler, Patty (CRM) <(b) (6)>
Cc Shapiro, Elizabeth (CIV) (b) (6)
Subject: Fwd: Conference Call - Rule 16 Subcommittee - March 27 - 2:30 PM EST

Andrew, Patty — I just received the email below and the attachments which relate to an upcoming call of a criminal rules subcommittee to consider two proposals to amend Rule 16 as it relates to discovery of expert testimony and related information.

As you'll see, the call only concerns whether there should be a fuller consideration of the proposals by the rules committee — (b)(5) per CRM — but I wanted to alert you to this and see if you have any thoughts at this point, including whether others in the Department should be consulted now. (b)(5) per CRM .

After the call, assuming there will be the fuller committee consideration, we can discuss how best to review current Department policy, engage with the Criminal Chiefs, and develop a position on all of this.

Let me know what you think.

-Jonathan

Begin forwarded message:

> **From:** "Sara Sun Beale" <(b) (6)@law.duke.edu>
> **To:** "(b)(6) Frances Skillman US Courts(b) (6)" <(b) (6)>, "(b)(6) Raymond Kethledge US Courts(b) (6)" <(b) (6)>, "(b) (6)(b) (6)@fd.org" <(b) (6)@fd.org>, "(b)(6) Gary Feinerman US Courts(b) (6)" <(b) (6)>, "(b) (6)@kirkland.com" <(b) (6)@kirkland.com>, "(b) (6)@law.gwu.edu" <(b) (6)@law.gwu.edu>, "(b) (6)@lswlaw.com" <(b) (6)@lswlaw.com>, "Wroblewski, Jonathan (CRM)" <(b) (6)>, "(b)(6) Donald Molloy US Courts(b) (6)" <(b) (6)>
> **Cc:** "(b)(6) Marcia Carter US Courts(b)" <(b) (6)>, "(b) (6)@lswlaw.com" <(b) (6)@lswlaw.com>, "(b)(6) Deborah Ethridge US Courts(b) (6)" <(b) (6)>, "(b) (6)@vanderbilt.edu" <(b) (6)@vanderbilt.edu>, "(b)(6) Rebecca Womeldorf US Courts(b) (6)" <(b) (6)>, "(b)(6) Julie Wilson US Courts(b) (6)" <(b) (6)>, "(b) (6)@kirkland.com" <(b) (6)@kirkland.com>
> **Subject: RE: Conference Call - Rule 16 Subcommittee - March 27 - 2:30 PM EST**

> Dear Subcommittee members,

The Committee has received two proposals to amend Rule 16, which will be discussed during the teleconference call at 2:30 EST on March 27. The dial-in information is below.

Attached please find those suggestions and our memo.

Regards,

Sara

Sara Sun Beale
Charles L. B. Lowndes Professor
Duke Law School
210 Science Drive
Durham, N.C. 27708-0360
PH: (b) (6)
Ema (b) (6)

From: (b)(6) Frances Skillman US Courts [(b) (6)]
Sent: Monday, March 12, 2018 3:32 PM
To (b)(6) Raymond Kethledge US Courts; (b) (6) @fd.org; (b)(6) Gary Feinerman US Courts; (b) (6) @kirkland.com; (b) (6) @law.gwu.edu; (b) (6) @lswlaw.com; (b)(6) Jonathan Wroblewski US Court; (b)(6) Donald Molloy US Courts
Cc: (b)(6) Marcia Carter US Courts; (b) (6) @lswlaw.com; (b)(6) Deborah Ethridge US Courts; (b) (6) @vanderbilt.edu; Sara S Beale <(b) (6) @law.duke.edu>; (b)(6) Rebecca Womeldorf US Courts; (b)(6) Julie Wilson US Courts; (b) (6) @kirkland.com
Subject: Conference Cal - R e 16 Subcommittee - March 27 - 2:30 PM EST

On behalf of Judge Kethledge, I am writing to notify you that the conference call of the Rule 16 Subcommittee i scheduled for March 27, 2018 at 2:30 P.M. EST. The call should last for an hour.

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Be t regard
Fran

Frances F. Skillman
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From: [redacted]
Sent: Sunday, July 23, 2017 9:01 PM
To: John Siffert
Subject: Pre-Trial Expert Discovery

Dear John,

Following up on our conversation of the other evening, and writing to you in your capacity as a member of the federal criminal rules committee, I would like to suggest that Rule 16 of the federal criminal rules be amended so that experts are required by Rule 16 to make the same sort of detailed pre-trial reports and disclosures as are required in federal civil cases by Rule 26 of the Federal Rules of Civil Procedure. As it stands now, the expert discovery provisions of Rule 16 of the criminal; rules are couched in much vaguer language than the parallel provisions of Rule 26 of the civil rules, and the result is (as the caselaw and everyday experience both attest) that the pre-trial expert disclosures in federal criminal cases are frequently much more minimal than the comparable expert disclosures in civil cases. Since it is obvious that one cannot meaningfully challenge an expert's testimony without substantial pre-trial discovery, the result is that counsel are frequently blindsided by expert testimony given in criminal cases. This may be part of the reason why, according to the Innocence Project, inaccurate expert testimony was a factor in over half of the wrongful convictions later reversed by DNA testing done by the Innocence Project. And, according to the National Registry of Exonerations maintained by the University of Michigan, of the more than 2,000 criminal convictions reversed since 1989 on the basis of post-conviction factual exoneration, the single largest factor common to the wrongful convictions was inaccurate expert testimony.

In June of 2016, the National Commission on Forensic Science overwhelmingly approved a recommendation to the Department of Justice that the Department, notwithstanding the vague language of Rule 16, voluntarily agree to make the same kind of disclosures in federal criminal cases as Rule 26 of the federal civil rules mandates in civil cases. The NCFS recommendation is attached below. In response, the Department issued a Memorandum in January of this year largely agreeing with that recommendation and, indeed, reminding federal prosecutors of prior DOJ memos suggesting much the same. That memo is also attached below. None of this, however, has the force of law, and high-level Department officials have admitted to me that, in fact, there has been very wide variance among U.S. Attorney's Offices, and even among individual AUSAs, as to how much or little has to be disclosed before an expert witness is called to testify in a federal criminal case. Even where very little was disclosed, moreover, the vagueness of Rule 16 has resulted in few defense counsel challenging even the most bare-bones expert disclosures and, in those few cases where such challenges have been made, they have very, very rarely succeeded: -- hence the need to revise Rule 16. At the same time, the Department's positive attitude, as reflected in its memo attached below, suggests that it would not strenuously oppose the suggested revision of Rule 16 (except perhaps to claim it was "unnecessary"). And, frankly, I cannot think of a single reason why the policy considerations that led the framers of Rule 26 to draft specific requirements for expert disclosures do not apply with the same or even greater force in the criminal context. Accordingly, the two rules should be made more or less identical.

Thank you for considering this proposal.

Jed Rakoff

NATIONAL COMMISSION ON FORENSIC SCIENCE

NIST National Institute of Standards and Technology U.S. Department of Commerce

Recommendations to the Attorney General
Pretrial Discovery

Subcommittee
Reporting and Testimony
Status
Adopted by the Commission

Date of Current Version	08/05/16
Approved by Subcommittee	11/05/16
Approved by Commission	21/06/16
Action by Attorney General	[*dd/mm/yy*] 05/01/17

Commission Action
On June 21, 2016, the Commission voted to adopt this Recommendation by a more than two-thirds majority affirmative vote (78% yes, 18% no, 3% abstain)

Recommendations
The National Commission on Forensic Science recommends that the Attorney General take the following actions:

- **Recommendation #1: The Attorney General should direct federal prosecutors, when they intend to offer expert testimony on forensic science test results and conclusions, to provide to the court and defense counsel, reasonably in advance of trial, a report prepared by this expert that contains:**
  - **(i) a statement of all opinions the witness will express and the basis and reasons for them;**
  - **(ii) the facts or data considered by the witness in forming them;**
  - **(iii) any exhibits that will be used to summarize or support them;**
  - **(iv) the witness's qualifications, including a list of all publications authored in the previous 10 years;**
  - **(v) a list of all other cases in which, during the previous 4 years, the witness testified as an expert at trial or by deposition; and**
  - **(vi) a statement of the compensation to be paid the witness.**

With three modifications, this Recommendation tracks Federal Rule of Civil Procedure 26(a)(2)(B). Because of speedy trial and case management concerns, "reasonably in advance of trial" has been substituted for the 90-days-before-trial disclosure requirement of the Civil Rule, but the Commission expects that "reasonably in advance of trial" will usually mean at least a few weeks before trial and with sufficient time for the defense to consult with and/or secure expert assistance. Also, although the Civil Rule requires "a *complete* statement of all opinions," the Recommendation excises the word "complete" in the belief that it is at best confusing and at worst

unnecessarily burdensome. Finally, the Commission intends that the listing requirement of (v) take effect prospectively, as not all forensic experts may have kept such lists in the past.

- **Recommendation #2: The Attorney General should direct federal prosecutors to allow the defendant full access to the expert's case record.**

As depositions of an adversary's expert witnesses are not permitted in federal criminal cases, access to the expert's underlying case record is proposed to mitigate the absence of discovery depositions and to allow the adversary party to examine the underlying data on which the expert's opinions are based (subject to any judicial protective order).

- **Recommendation #3: To the extent the aforementioned disclosures exceed what is presently required by federal law, the Attorney General should authorize federal prosecutors to condition such additional disclosures on the defense's agreeing to provide the same broad disclosures if the defense intends to offer forensic expert testimony.**

Federal Rule of Criminal Procedure 16(b)(1)(C) requires a defendant who intends to offer expert testimony to give the government the same kind of disclosure that the government is required to give the defendant under 16(a)(1)(G). But because the discovery proposed by the Commission's recommendations would go beyond what is required by 16(a)(1)(G), it seems only fair for the government, if it chooses, to condition such additional disclosure on the defendant's agreement that it will make the same broad disclosures if it intends to offer forensic expert testimony of its own (subject to any claim of privilege upheld by the court).

Commentary

The need for pretrial discovery of forensic evidence in criminal cases is critical—for both the prosecution and defense—because "it is difficult to test expert testimony at trial without advance notice and preparation."[1] Indeed, in a number of the cases in which convicted defendants were subsequently exonerated by DNA testing, the failure to disclose exculpatory forensic evidence played a role in the wrongful convictions.[2] There are many other advantages to comprehensive discovery as well. Even in the case of DNA, according to President Bush's DNA Initiative[3], "[e]arly disclosure can have the following benefits: [1] Avoiding surprise and unnecessary delay. [2] Identifying the need for defense expert services. [3] Facilitating exoneration of the innocent and encouraging plea negotiations if DNA evidence confirms guilt." These benefits likewise apply to other forensic evidence. Providing forensic science test results, opinions, and conclusions reasonably in advance of trial is also critical to facilitating a comprehensive and scientific review of the data. Such disclosures will allow opposing experts to sufficiently review the scientific findings to provide appropriate guidance to counsel and help form their own opinions.

Nevertheless, notwithstanding the great need for pretrial disclosure, discovery regarding forensic evidence intended to be offered in criminal cases is not required to be nearly as

[1] Fed. R. Crim. P. 16 (1975), advisory committee's note.
[2] *See* Brandon L. Garrett, Convicting the Innocent: Where Criminal Prosecutions Go Wrong 108 (2011).
[3] National Institute of Justice, President's DNA Initiative: Principles of Forensic DNA for Officers of the Court (2005).

expansive or as timely as in civil litigation. Ironically, this is despite the fact that, under federal law, experts can be deposed in civil cases but not in criminal cases, so that the need for substantial pretrial written disclosure would seem to be even greater in criminal cases than in civil cases if trial by ambush is to be avoided. Historically, this disparity has been justified on three grounds: substantial pretrial discovery in criminal actions will (1) encourage perjury, (2) lead to the intimidation of witnesses, and (3) be a one-way street because of the Fifth Amendment privilege against self-incrimination.[4] With forensic evidence, however, these traditional arguments against criminal discovery lose whatever force they might otherwise have. The first argument fails because "it is virtually impossible for evidence or information of this kind to be distorted or misused because of its advance disclosure."[5] Also, there is no evidence that the intimidation of experts is a major problem, both because in federal practice, the expert is often a government employee, and because the evidence can often be reexamined, if necessary, by another expert.[6] Finally, the Self-incrimination Clause, as presently interpreted by the Supreme Court, is not an impediment to the prosecution's obtaining pretrial discovery regarding forensic science that the defendant intends to offer.[7]

Although Federal Rule of Criminal Procedure 16(a)(1)(G) requires the government, on defendant's request, to provide a summary of a forensic expert's "opinions, the bases and reasons for those opinions, and the witness's qualifications," this provision, perhaps because of the aforementioned history, has often been narrowly interpreted by the government and the courts. By contrast, Federal Rule of Civil Procedure 26(a)(2) not only sets forth in much greater detail what disclosures regarding expert testimony must be made prior to trial but also provides that such disclosure, absent court order, must be made well in advance of trial. The need for meaningful and timely discovery in relation to expert testimony is particularly acute in the case of forensic science, where questionable forensic science has often gone unchallenged. The Commission is therefore of the view that the Attorney General, both as a matter of fairness and also to promote the accurate determination of the truth, should require her assistants to make pretrial disclosure of forensic science more in keeping with what the federal civil rules presently require than the more minimal requirements of the federal criminal rules. *See* Recommendation #1, above. Further, in the absence of depositions, the defendant should have access to the expert's case record. *See* Recommendation #2, above. Finally, to the extent permitted by law, the defense should also be reciprocally required to make these enhanced disclosures. *See* Recommendation #3, above.

It should be noted that the foregoing recommendations, designed to achieve the purposes summarized above, are a direct application to the particularities of *federal* practice of the Views Document on Discovery adopted by this Commission on August 11, 2015. Application to *state* practice might require different modifications.

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[4] *See* 2 Charles Alan Wright & Arthur R. Miller, Federal Practice and Procedure § 252, at 36-37 (2d ed. 1982).

[5] Commentary, ABA Standards for Criminal Justice, Discovery and Procedure Before Trial 67 (Approved Draft 1970).

[6] 2 Wayne LaFave & Jerod Israel, Criminal Procedure § 19.3, at 490 (1984) ("Once the report is prepared, the scientific expert's position is not readily influenced, and therefore disclosure presents little danger of prompting perjury or intimidation.").

[7] *See* Williams v. Florida, 399 U.S. 78, 85 (1970) ("At most, the [discovery] rule only compelled petitioner to accelerate the timing of his disclosure, forcing him to divulge at an earlier date information that the petitioner from the beginning planned to divulge at trial."); United States v. Nobles, 422 U.S. 225, 234 (1975) (compelled production of defense investigator's notes does not violate the Fifth Amendment because it involved no compulsion of the defendant).

U.S. Department of Justice

Office of the Deputy Attorney General

The Deputy Attorney General

Washington, D.C. 20530

January 5, 2017

MEMORANDUM FOR DEPARTMENT PROSECUTORS
DEPARTMENT FORENSIC SCIENCE PERSONNEL

FROM: Sally Q. Yates
Deputy Attorney General

SUBJECT: Supplemental Guidance for Prosecutors Regarding Criminal Discovery Involving Forensic Evidence and Experts

Forensic evidence is an essential tool in helping prosecutors ensure public safety and obtain justice for victims of crime. When introduced at trial, such evidence can be among the most powerful and persuasive evidence used to prove the government's case. Yet it is precisely for these reasons that prosecutors must exercise special care in how and when forensic evidence is used. Among other things, prosecutors must ensure that they satisfy their discovery obligations regarding forensic evidence and experts, so that defendants have a fair opportunity to understand the evidence that could be used against them.

In January 2010, then-Deputy Attorney General David Ogden issued a memorandum entitled *Guidance for Prosecutors Regarding Criminal Discovery* (the "Ogden Memo"), which provided general guidance on gathering, reviewing, and disclosing information to defendants.[1] Given that most prosecutors lack formal training in technical or scientific fields, the Department has since determined that it would be helpful to issue supplemental guidance that clarifies what a prosecutor is expected to disclose to defendants regarding forensic evidence or experts. Over the past year, a team of United States Attorneys, Department prosecutors, law enforcement personnel, and forensic scientists worked together to develop the below guidance, which serves as an addendum to the Ogden Memo.

All Department prosecutors should review this guidance before handling a case involving forensic evidence. In addition, any individuals involved in the practice of forensic science at the Department, especially those working at our law enforcement laboratories, should familiarize themselves with this guidance so that they can assist prosecutors when the government receives a request for discoverable material in a case. Thank you for your attention to this issue and for the work you do every day to further the proud mission of this Department.

[1] Memorandum from David W. Ogden, Deputy Attorney General, to Department Prosecutors, *Guidance for Prosecutors Regarding Criminal Discovery*, January 4, 2010, available at http://dojnet.doj.gov/usao/eousa/ole/usabook/memo/ogden_memo.pdf.

SUPPLEMENTAL GUIDANCE FOR PROSECUTORS REGARDING CRIMINAL DISCOVERY INVOLVING FORENSIC EVIDENCE AND EXPERTS[1]

Forensic science covers a variety of fields, including such specialties as DNA testing, chemistry, and ballistics and impression analysis, among others. As a general guiding rule, and allowing for the facts and circumstances of individual cases, prosecutors should provide broad discovery relating to forensic science evidence as outlined here. Disclosure of information relating to forensic science evidence in discovery does not mean that the Department concedes the admissibility of that information, which may be litigated simultaneously with or subsequent to disclosure.

The Duty to Disclose, Generally

The prosecution's duty to disclose is generally governed by Federal Rules of Criminal Procedure 16 and 26.2, the Jencks Act (18 U.S.C. §3500), *Brady v. Maryland*, 373 U.S. 83 (1963), and *Giglio v. United States*, 405 U.S. 150 (1972). In addition, §9-5.001 of the United States Attorney's Manual describes the Department's policy for disclosure of exculpatory and impeachment material.

Rule 16 of the Federal Rules of Criminal Procedure establishes three disclosure responsibilities for prosecutors that may be relevant to forensic evidence. First, under Fed. R. Crim. P. 16(a)(1)(F), the government must, upon request of the defense, turn over the results or reports of any scientific test or experiment (i) in the government's possession, custody or control, (ii) that an attorney for the government knows or through due diligence could know, and (iii) that would be material to preparing the defense or that the government intends to use at trial. Second, under Fed. R. Crim. P. 16(a)(1)(G), if requested by the defense, the government must provide a written summary of any expert testimony the government intends to use at trial. At a minimum, this summary must include the witness's opinions, the bases and reasons for those opinions, and the expert's qualifications. Third, under Fed. R. Crim. P. 16(a)(1)(E), if requested by the defense, the government must produce documents and items material to preparing the defense that are in the possession, custody, or control of the government. This may extend to records documenting the tests performed, the maintenance and reliability of tools used to perform those tests, and/or the methodologies employed in those tests.

Both the Jencks Act and *Brady/Giglio* may also come into play in relation to forensic evidence. For example, a written statement (report, email, memo) by a testifying forensic witness may be subject to disclosure under the Jencks Act if it relates to the subject matter of his or her testimony. Information providing the defense with an avenue for challenging test results may be *Brady/Giglio* information that must be disclosed. And, for forensic witnesses employed by the government, *Giglio* information must be gathered from the employing agency and reviewed for possible disclosure.

These are the minimum requirements, and the Department's discovery policies call for disclosure beyond these thresholds.

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[1] This document is not intended to create, does not create, and may not be relied upon to create any rights, substantive or procedural, enforceable at law by any party in any matter civil or criminal.

The Duty to Disclose in Cases with Forensic Evidence and Experts

The Department's policy to provide discovery over and above the minimum legal thresholds applies to cases with forensic evidence. Rule 16's disclosure requirements – disclosing the results of scientific tests (16(a)(1)F)), the witness' written summary (16(a)(1)(G)), and documents and items material to preparing the defense (16(a)(1)(E)) – are often jointly satisfied when presenting expert forensic testimony, since disclosure of the test results, the bases for those results, and the expert's qualifications will often provide all the necessary information material to preparation of the defense. But, depending on the complexity of the forensic evidence, or where multiple forensic tests have been performed, the process can be complicated because it may require the prosecutor to work in tandem with various forensic scientists to identify and prepare additional relevant information for disclosure. Although prosecutors generally should consult with forensic experts to understand the tests or experiments conducted, responsibility for disclosure ultimately rests with the prosecutor assigned to the case.

In meeting obligations under Rule 16(a)(1)(E), (F), and (G), the Jencks Act, and *Brady/Giglio*, and to comply with the Department's policies of broad disclosure, the prosecutor should be attuned to the following four steps:

1. First, the prosecutor should obtain the forensic expert's laboratory report, which is a document that describes the scope of work assigned, the evidence tested, the method of examination or analysis used, and the conclusions drawn from the analyses conducted. Depending on the laboratory, the report may be in written or electronic format; the laboratory may routinely route the report to the prosecutor, or the prosecutor may need to affirmatively seek the report from the forensic expert or his or her laboratory. In most cases the best practice is to turn over the forensic expert's report to the defense if requested. This is so regardless of whether the government intends to use it at trial or whether the report is perceived to be material to the preparation of the defense. If the report contains personal information about a victim or witness, or other sensitive information, redaction may be appropriate and necessary. This may require court authorization if the forensic expert will testify, as the report likely will be considered a Jencks Act statement. (See the Additional Considerations section below.)

2. Second, the prosecutor should disclose to the defense, if requested, a written summary for any forensic expert the government intends to call as an expert at trial. This statement should summarize the analyses performed by the forensic expert and describe any conclusions reached. Although the written summary will vary in length depending on the number and complexity of the tests conducted, it should be sufficient to explain the basis and reasons for the expert's expected testimony. Oftentimes, an expert will provide this information in an "executive summary" or "synopsis" section at the beginning of a report or a "conclusion" section at the end. Prosecutors should be mindful to ensure that any separate summary provided pursuant to Rule 16(a) should be consistent with these sections of the report. Further, any changes to an expert's opinion that are made subsequent to the initial disclosure to the defense ordinarily should be made in writing and disclosed to the defense.

3. Third, if requested by the defense, the prosecutor should provide the defense with a copy of, or access to, the laboratory or forensic expert's "case file," either in electronic or hard-copy form. This information, which may be kept in an actual file or may be compiled by the forensic expert, normally will describe the facts or data considered by the forensic expert, include the underlying documentation of the examination or analysis performed, and contain the material necessary for another examiner to understand the expert's report. The exact material contained in a case file varies depending on the type of forensic analysis performed. It may include such items as a chain-of-custody log; photographs of physical evidence; analysts' worksheets or bench notes; a scope of work; an examination plan; and data, charts and graphs that illustrate the results of the tests conducted.

   In some circumstances, the defense may seek laboratory policies and protocols. To the extent that a laboratory provides this information online, the prosecutor may simply share the web address with the defense. Otherwise, determinations regarding disclosure of this information should be made on a case-by-case basis in consultation with the forensic analysts involved, taking into account the particularity of the defense's request and how relevant the request appears to be to the anticipated defenses.

4. Fourth, the prosecutor should provide to the defense information on the expert's qualifications. Typically, this material will include such items as the expert's curriculum vitae, highlighting relevant education, training and publications, and a brief summary that describes the analyst's synopsis of experience in testifying as an expert at trial or by deposition. The prosecutor should gather potential *Giglio* information from the government agency that employs the forensic expert. If using an independent retained forensic expert, the prosecutor should disclose the level of compensation as potential *Giglio* information; the format of this disclosure is left to the discretion of the individual prosecuting office.

Disclosure should be made according to local rules but at least as soon as is reasonably practical and, of course, reasonably in advance of trial. It is important that the prosecutor leave sufficient time to obtain documents and prepare information ahead of disclosure. When requesting supporting documents from a laboratory's file regarding a forensic examination, the prosecutor should consult the guidelines set by the laboratory for the manner in which discovery requests should be made, and for the time required for them to process and deliver the materials to the prosecutor. Further, if multiple forensic teams have worked on a case, the prosecutor should build in sufficient time to consult with, and obtain relevant materials from, each relevant office or forensic expert.

Additional Considerations

Certain situations call for special attention. These may include cases with classified information or when forensic reports reveal the identities of cooperating witnesses or undercover officers, or disclose pending covert investigations. In such cases, when redaction or a protective order may be necessary, prosecutors should ordinarily consult with supervisors.

Laboratory case files may include written communications, including electronic communication such as emails, between forensic experts or between forensic experts and prosecutors. Prosecutors should review this information themselves to determine which communications, if any, are protected and which information should be disclosed under *Brady/Giglio*, Jencks, or Rule 16. If the circumstances warrant (for example, where review of a case file indicates that tests in another case or communications outside the case file may be relevant), prosecutors should request to review additional materials outside the case file. At the outset of a case, prosecutors should ensure that they and all forensic analysts involved are familiar with and follow the Deputy Attorney General's memorandum entitled "Guidance on the Use, Preservation, and Disclosure of Electronic Communications in Federal Criminal Cases": http://dojnet.doj.gov/usao/eousa/ole/usabook/memo/dag_ecom.pdf.

Finally, when faced with questions about disclosure, prosecutors should consult with a supervisor, as the precise documents to disclose tend to evolve, based especially upon the practice of particular laboratories, the type and manner of documentation at the laboratory, and current rulings from the courts.

From: [redacted]
Sent: Friday, December 1, 2017 2:39 PM
To: [redacted]
Cc: [redacted]
Subject: Proposed revision to Fed. R. Crim. P. 16 regarding expert disclosures

Dear Judge Molloy (Don) and Professor Beale:

As you may be aware, recently the Evidence Rules Advisory Committee held a symposium focusing on admissibility of forensic evidence, and the effectiveness of Daubert/Rule 702. I was privileged to have been invited to speak about challenges to effective application of the Daubert/702 test in criminal cases. I also was asked to contribute a short article on this topic to the Fordham Law Review, which is publishing articles related to the symposium.

With the permission of Professor Dan Capra (copied on this email) I am attaching my short article. It sets out my views regarding the challenges facing judges in applying Daubert/702 in criminal cases, and offers some modest suggestions how things might be improved. One improvement that would go a long way would be to amend Fed. R. Crim P. 16(a)(1)(G) & (b)(1)(C) to more closely parallel the far more robust expert disclosures required by the Federal Rules of Civil Procedure (Rule 26(a)(2)).

Thank you in advance for considering this issue, and please feel free to contact me if you have any questions.

Kind regards,

Paul Grimm

Challenges Facing Judges Regarding Expert Evidence in Criminal Cases

Paul W. Grimm[1]

Introduction

Ever since the Supreme Court decided the *Daubert* case,[2] the role of the trial judge in determining admissibility of expert testimony has become familiar. We are to be the "gatekeepers" standing between the parties (who naturally offer the most impressive experts whom they can find or afford, who are willing to advance their theory of the case) and the jury, who must come to grips with scientific, technical or other specialized information that usually is completely unfamiliar to them. This role is imposed by Fed. R. Evid. 104(a), which provides, in essence, that the trial judge must decide preliminary issues about the admissibility of evidence, the qualification of witnesses, and the existence of any privileges. When applying this rule with respect to experts, we further are informed by Fed. R. Evid. 702. As amended in 2000, to implement *Daubert*, it instructs that when scientific, technical or specialized knowledge would assist the finder of fact in understanding the evidence or making a fact determination, a witness qualified by virtue of knowledge, skill, experience, training or education, may testify in the form of an opinion or otherwise, provided (1) the testimony is sufficiently based on facts or data (2) any opinions expressed are the result of reliable principles or methodology, and (3) the witness reliably has applied the principles or methodology to the facts of the case. With regard to the reliability factors, *Daubert* and its progeny[3]identify a number of sub-

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[1] United States District Judge, District of Maryland. The opinions in this article are mine alone.

[2] *Daubert v. Merrell Dow Pharma., Inc.*, 509 U.S. 579 (1993).

[3] *General Electric v. Joiner*, 522 U.S. 136 (1997), and *Kumho Tire v. Carmichael*, 526 U.S. 137 (1999).

factors that a court may need to consider: whether the methodology has been tested; its error rate; whether it has been subject to peer review; whether it is generally accepted as reliable among practitioners of the relevant field of science or technology, and whether (if they exist) standard testing protocols have been followed.[4]

This sounds pretty straightforward until you take a minute to consider exactly what is involved. First, the acceptable subjects for expert testimony encompass science, technology, and any other type of specialized knowledge beyond the understanding of the typical jury. That covers a lot of territory. And if admissibility of expert testimony is conditioned on the notion that the jury needs help in understanding evidence beyond their familiarity, then why should it be assumed that the trial judge has any greater understanding than the jury? After all, most judges are generalists, and, if similar to me, do not regard themselves as specialists in science or technology, let alone the limitless types of "specialized" knowledge that may be relevant to a case (economics, accounting, business, finance, engineering, construction—the list is endless).

[4] The *Daubert* factors are: (1) whether the expert's technique or theory has been or can be tested; (2) whether the technique or theory has been peer reviewed; (3) whether there is a known or potential error rate associated with the application of the technique or theory; (4) whether there are established standards and controls governing the technique or theory that have been complied with; and (5) whether the technique or theory has been generally accepted as reliable in the relevant scientific or technical community. Advisory Committee Notes to 2000 Amendments to Fed. R. Evid. 702. The Advisory Committee Notes also recognize additional factors that a court may want to consider, such as: (1) whether the expert proposes to testify about facts derived from research independent of the litigation, as opposed to expressing opinions developed expressly for the litigation; (2) whether the expert unjustifiably extrapolated from an accepted to an unfounded conclusion; (3) whether the expert accounted for obvious alternative explanations; (4) whether the expert is being as careful in reaching his opinions as he would be when doing his regular professional work outside of the litigation context; and (5) whether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert intends to offer at trial. *Id.*

Second, to do our jobs as required by Rule 702, we must find that the expert had sufficient facts or data on which to base her opinions, employed reliable principles or methodology, and then reliably applied the principles or methodology to the particular facts of the case. Well enough, but consider that trial judges are privy to very few of the underlying facts of a case (whether civil or criminal) before the trial. Indictments and civil pleadings are pretty sparse when it comes to factual particularity—that's what discovery is supposed to provide. But discovery requests and responses are not filed with the court, so by the time the case is ready for trial, all we know about the case is what we can glean from the filings that have been made before trial. These tend to focus on specific legal issues, rather than a panoramic view of the whole case. So how are we, the least informed about the underlying facts when compared to the knowledge of the parties, counsel and experts, to determine whether an expert considered sufficient facts or data?

And even if we were omniscient about the facts, what qualifies us to determine whether the principles or methodology employed by an expert (whose field we do know) is reliable, and reliably applied to the facts? When it comes to admissibility of expert evidence, many trial judges feel like they are in a battle of wits, unarmed.

The skeptical reader will scoff and say: "Stop feeling sorry for yourself; the information you need to determine admissibility of expert evidence is provided to you in the form of discovery disclosures required by Fed. R. Civ. P. 26(a)(2) and Fed. R. Crim. P. 16(a)(1)(G) and (b)(1)(C), and in motions *in limine* filed before trial challenging admissibility (or seeking advance rulings of admissibility) of expert testimony!" That's true, but only to a certain extent. First, the parties must have properly made their expert disclosures, and any judge will tell you that frequently they do not. Second, the issue of

expert admissibility must be raised sufficiently far in advance of trial for the judge to digest the information, hold a hearing, if needed, and make a considered ruling. That does not always happen, and it is not unusual to be confronted with an objection to expert testimony on the eve of trial, or during it.

Finally, with regard to criminal cases, the focus of this article, judges face significant challenges in ruling on admissibility of expert testimony that do not occur in most civil cases. I will start by describing these challenges, and then offer some suggestions about what can be done to address them.

Challenges to Making Good Expert Admissibility Rulings in Criminal Cases

1. The Right to a Speedy Trial

The Sixth Amendment states that, "[i]n all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial . . . ." This right is implemented by the Speedy Trial Act of 1974, 18 U.S.C. § 3161 *et seq.* It provides, relevantly:

> In any case in which a plea of not guilty is entered, the trial of a defendant charged in an information or indictment with the commission of an offense shall commence within seventy days from the filing date (and making public) of the information or indictment, or from the date the defendant has appeared before a judicial officer . . . whichever date last occurs.

18 U.S.C. § 3161(c)(1). Now, there are lots of statutory exceptions to this seventy-day requirement,[5] and most criminal cases do not, in fact, get tried within seventy days, but the right to a speedy trial animates the entire pretrial process in a criminal case in ways that do not occur in civil cases. The clock is always ticking, and the judge is expected to expedite the proceedings. This means that everything that must be done, including

[5] Exceptions include, for example, delays resulting from competency examinations, interlocutory appeals, filing (and resolution) of pretrial motions, transfer of the defendant from one district to another, and consideration by the court of a proposed guilty plea. 18 U.S.C. § 3161(h).

making expert witness disclosures, must take place at an accelerated pace. And when the many pretrial proceedings of a criminal case are accomplished within a compressed time frame, this puts pressure on both counsel and the court to get it all done correctly within the available time. When we are in a hurry, we are not always as careful, complete or deliberate as we are when time is not an issue, and this can (and often does) apply to when, and how detailed, expert disclosures are. Every trial judge is familiar with expert disclosures that are pro forma, incomplete, and conclusory, and those that are do not provide the detail needed for the judge to conduct Rule 702 analysis properly.

2. The breadth of expert testimony introduced in criminal cases.

Everyone who has watched any of the myriad CSI shows on TV is familiar with the type of forensic evidence that can be offered into evidence in criminal cases: fingerprint analysis, ballistics and tool mark evidence; DNA testing, footprint and tire track evidence, hair and fiber analysis, bite mark evidence, and handwriting evidence, to name a few. But a recent informal poll I took of lawyers in the offices of the United States Attorney and Federal Public Defender in my district revealed the following types of expert evidence introduced in recent criminal cases: mental health (competency and sanity issues); other medical conditions; coded language used by drug dealers; characteristics of gang activity; terrorist activities; characteristics of sex trafficking, reliability (or unreliability) of eye-witness identification; linguistic analytics; bitcoin and other digital currencies; computer forensics; characteristics and operation of firearms and explosives; counterfeit currency; controlled substance analysis; the difference between personal use and distribution quantities of drugs; vulnerability of sex trafficking victims;

field sobriety testing in drunk driving cases; and operation of cell towers and other methods of locating individuals through tracking devices.

Think about all these types of potential experts in criminal cases. While doctors and psychologists may have standard methodology that they apply in reaching their decisions, what about gang experts, or sex trafficking experts, or coded language experts? Not likely that their methodology has been subject to peer review, or that there are handy error rates to consider, so how is the judge to assess the reliability of their methodology? Further, many experts who testify in criminal cases are from law enforcement agencies—government crime labs or criminal investigation agencies. How does the judge evaluate potential bias that may affect the reliability of law enforcement experts? The prevalence of "specialized" as opposed to "scientific" expert witness testimony in criminal cases presents unique challenges to a judge in determining admissibility.

3. The pressure on the defendant to plead, and plead quickly

There is tremendous pressure on a criminal defendant in federal court to plead guilty, and do so quickly. This comes from the influence exerted on sentencing by the Sentencing Guidelines of the United States Sentencing Commission. Even though, in the absence of a statutory requirement to impose a particular type of sentence in a criminal case (so called "mandatory minimum" cases), the Sentencing Guidelines are just that—guidelines, not mandatory rules—the judge is required to properly calculate the guidelines in each case, and consider them in imposing a particular sentence. And while the judge can depart (up or down) within the recommended guidelines sentence, or vary (up or down) to impose a sentence outside the guidelines range, it is reversible error not

to begin the sentencing with correctly calculating the guidelines range that applies.[6] For those not familiar with the esoterica of the Sentencing Guidelines, the ultimate guidelines range is a function of two factors: the numerical offense level applicable to the crime(s) that the defendant pled to or was convicted of; and the numerical calculation applicable to the defendant's criminal history. Offense levels range from 1 to 43, and criminal history levels from I to VI. The higher the combined offense and criminal history scores, the greater the recommended range of the sentence. And a two or three level reduction in offense level can make a huge difference in the recommended sentence, particularly at the high end of the guidelines scale.[7]

Defendants who plead guilty, thereby accepting responsibility, receive a two point reduction in offense level. U.S.S.G. § 3E1.1(a). If the unadjusted offense level is 16 or greater, and the defendant pleads guilty (thereby earning the two point reduction), he or she can earn a one point additional reduction in offense level (for a grand total of 3 points), if the government makes a motion at the time of sentencing, stating that "the defendant has assisted authorities in the investigation or prosecution of his own misconduct by timely notifying authorities of his intention to plead guilty," which relieves the government from having to prepare for trial. U.S.S.G. § 3E1.1(b). So, the

[6] *United States v. McManus*, 734 F.3d 315, 318 (4th Cir. 2013) ("Although the sentencing guidelines are only advisory, improper calculation of a guideline range constitutes significant procedural error, making the sentence procedurally unreasonable and subject to being vacated." (quoting *United States v. Hargrove*, 701 F.3d 156, 161 (4th Cir. 2012)).

[7] For example, if a defendant has a guidelines score of offense level 33 and a criminal history score of III, his recommended sentence is 168-210 months. Drop the offense level by two points to 31, and the range is 135-168. Drop the offense level by three points, to 30, and the range is 121-151. These differences are significant, especially for the defendant who will be serving the sentence.

pressure on a defendant charged with a federal offense to plead guilty before the government has to invest a lot of time responding to pretrial motions and preparing for trial is intense, given the stakes at sentencing if the defendant goes to trial and is convicted, thereby becoming ineligible for any § 3E1.1 reduction.

This pressure plays out in the decision that a defense attorney has to make in providing effective representation to the defendant. Do you demand that the government make full disclosure of all the information relating to its expert witnesses, then challenge any that seem vulnerable by filing a motion to exclude their testimony (thereby jeopardizing the § 3E 1.1(b) reduction)? Or do you forego doing so to preserve the additional reduction in offense level and plead guilty promptly, thereby giving up in the process any chance of excluding expert testimony that may be critical to the government's ability to prove a charge? This is a tough position for a defense attorney and defendant to be in—guessing wrong can have serious consequences.

Since the vast majority of criminal cases in federal court are disposed of by plea, rather than trial (well above 90%, by most accounts[8]), the frequency with which the government's experts are challenged (thereby subjecting the sufficiency of their methodology and opinions to scrutiny by the court) is low. When experts grow accustomed to not being challenged, their perception of the need to fully document and justify their methodology and opinions can diminish. Similarly, when prosecutors are not often obliged to make timely, complete expert disclosures (and verifying before doing so that their experts have met the requirements of Rule 702), they too can become less

[8] *See* Emily Yoffe, Innocence is Irrelevant, *The Atlantic* (Sept. 2017), *available at* https://www.theatlantic.com/magazine/archive/2017/09/innocence-is-irrelevant/534171/ ("Some 97 percent of federal felony convictions are the result of plea bargains").

vigilant in monitoring what their potential experts have done in a particular case to ensure that they base their opinions on sufficient facts, and employ reliable principles or methodology. And, when defense counsel infrequently demand full disclosure of information related to the government's experts (and even less frequently challenge admissibility), they undermine their ability to recognize deficient expert opinions, and their skill to challenge them effectively. And if any (or all) of these circumstances occur, then when the time comes that a challenge is made and the judge must hold a hearing, the underlying premise of *Daubert*[9] —that effective examination of the government expert by the defense attorney will help the trial judge properly exercise her gatekeeping responsibility by exposing shortcomings in the witnesses' opinions—may be compromised by insufficiently detailed information to assess reliability, and insufficient skill by counsel to develop the facts and arguments to clarify the issues that the judge must decide.

4. *Difficulties faced by defense counsel in obtaining defense experts to challenge government experts*

In the vast majority of federal criminal cases, defendants are represented by either federal public defenders or private counsel appointed pursuant to the Criminal Justice Act ("CJA").[10] While public defenders may have resources to locate and hire experts in criminal cases without the approval or assistance of the court, few CJA attorneys have the financial ability to hire defense experts without requesting advance approval from the

[9] In *Daubert*, the court noted that "[v]igouous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." 509 U.S. at 596 (quoting *Rock v. Arkansas*, 483 U.S. 44, 66 (1987)). Inexperienced counsel lacking access to qualified defense experts are not well suited to "vigorously" cross examining government experts.

[10] 18 U.S.C. § 3006A.

presiding trial judge (without which CJA funds are not available to pay the expert). That means that in many criminal cases, the defense attorney must file a motion with the court to request authorization to hire an expert witness, and justify the need to do so—something the government is never obligated to do.

Further, as already noted, many of the experts called by the government in a criminal case are involved in the investigation of criminal cases, or work for government crime labs. That means that prosecutors frequently work with their experts throughout the investigation of the case, becoming familiar with what they have done long before charges ever are filed. In contrast, once their clients has been indicted, and the speedy-trial clock has begun, defense counsel have much less time to decide whether to seek a defense expert. And they cannot even begin to make that decision until after they request, and receive, expert disclosures from the government. Unlike Fed. R. Civ. P. 26(a)(2), which requires that in civil cases any party that intends to introduce expert testimony must make proper disclosure of the opinions (and supporting basis) their experts will make "at least 90 days before the date set for trial or for the case to be ready for trial [unless otherwise ordered by the court]," Fed. R. Crim. P. 16(a)(1)(G) does not require mandatory disclosure of the government's experts and their opinions; the defense must request it. And if the defense does request it, Rule 16 does not impose a deadline by which the government must make its disclosure. So, unless the trial judge sets a date for expert disclosures (and not all do), the defense must make its request and wait for the prosecution to make its disclosure. Not all prosecutors do so promptly upon request, and it is not an infrequent occurrence for defense counsel to receive government expert

disclosures so close to the trial date that it poses real problems for the defendant to have enough time to locate (and get court approval for) a defense expert.

Compounding this difficulty, when defense attorneys do decide to retain a defense expert, they may have difficulty finding one because many of the experts needed in criminal cases come from law enforcement. Unless the defense attorney can find a retired or former government investigator, they are not going to be able to locate one from the ranks of currently employed law enforcement investigators. As noted in the Federal Judicial Center's *Reference Manual on Scientific Evidence*, "adversarial testing [of expert testimony in criminal cases] presupposes advance notice of the content of the expert's testimony and access to comparable expertise to evaluate that testimony."[11] Just how effectively can the defendant in a criminal case challenge the government's expert testimony without access to a comparable defense expert to review the work done by the government's expert and critique any factual insufficiencies or methodological shortcomings? And without informed and skilled challenge by the defense, how is the trial judge to perform his gatekeeping duty and make the findings required by Rule 702 and *Daubert* when deciding objections to government experts?

5. Insufficiently detailed disclosure of expert opinions under the criminal procedure rules

[11] Reference Manual on Scientific Evidence 124 (3d ed. Fed. Judicial Ctr. 2011); *see also* Advisory Committee Note to Fed. R. Crim. 16 (1993 Amendment) ("[Rule 16's expert disclosure provision] is intended to minimize surprise that often results from unexpected expert testimony, reduce the need for continuances and to provide the opponent with a fair opportunity to test the merit of the expert's testimony through focused cross-examination.").

As noted, Fed. R. Crim. P. 16(a)(1)(G) imposes an obligation on the government[12] to disclose expert testimony it intends to introduce at trial. It states:

> At the defendant's request, the government must give to the defendant a written summary of any testimony that the government intends to use under Rules 702, 703, or 705 of the Federal Rules of Evidence during its case-in-chief at trial . . . . The summary provided under this subparagraph must describe the witness's opinions and the bases and reasons for those opinions, and the witness's qualifications.

At first glance, this seems pretty reasonable. But contrast the disclosure requirement in Rule 16(a)(1)(G) with its counterpart in the Rules of Civil Procedure, Rule 26(a)(2)(A) and (B):

> [A] party must disclose to the other parties the identify of any witness it may use at trial to present evidence under Federal Rule of Evidence 702, 703, or 705 . . . . Unless otherwise stipulated or ordered by the court, this disclosure must be accompanied by a written report—prepared and signed by the witness—if the witness is one retained or specially employed to provide expert testimony in the case or one whose duties as the party's employee regularly involve giving expert testimony. The report must contain: (i) a complete statement of all opinions the witness will express and the basis and reasons for them; (ii) the facts or data considered by the witness in forming them; (iii) any exhibits that will be used to summarize or support them; (iv) the witness's qualifications, including a list of all publications authored in the previous 10 years; (v) a list of all other cases in which during the previous 4 years, the witness testified as an expert at trial or by deposition; and (vi) a statement of the compensation to be paid for the study and testimony in the case.

Which disclosure would you rather have if you had to prepare to challenge the testimony of an adversary's expert? The answer is obvious. The disclosure requirement in the civil rules is significantly more robust. It requires that the expert *sign* a written report. This prevents an expert from distancing herself from vagueness, incompleteness or inaccuracy in the report by attributing its contents to an attorney who drafted it (as usually is the case for most discovery disclosures and responses in civil and criminal

[12] A reciprocal obligation is imposed on the defense. Fed. R. Crim. P. 16(b)(1)(C).

cases), rather than the expert. It must contain a *complete* statement of *all* opinions that will be given at trial, and the *basis* and *reasons* for them. This allows the cross-examining attorney to prevent the expert from adding at trial opinions or supporting facts not found in the written report, the abusive practice of "testifying beyond the report." It also prevents the expert from offering conclusions only—without the supporting reasons and bases underlying them. The report also must contain the facts or data *considered* by the expert (not just the facts that the expert intends to rely upon), as well as any exhibits that will be used to summarize or support the expert's trial testimony. This prevents an expert from "cherry-picking" favorable facts to support his opinions without disclosing unfavorable ones which, when known, can show that the opinion is not well founded.

To even a casual observer, the expert disclosures required by the rules of civil procedure are far more robust, detailed and helpful to the recipient than those required by the criminal procedure rules. Further, in civil cases, the parties also can take the deposition of an opposing expert (and usually do), which affords the opportunity to further flesh out the expert's opinions, methodology and supporting factual basis. If lawyers in civil cases then challenge admissibility of an expert's opinion, they have substantially more information to support their challenge than criminal lawyers do, because depositions of experts are unavailable in criminal cases. In contrast to the comprehensive disclosures in civil cases, in criminal cases, most of the expert disclosures I have seen (and remember that the trial judge does not see the disclosure unless there is a challenge, because the disclosure only is served on the defense attorney, not docketed on the court record) were cursory as well as conclusory, and not particularly useful for cross-

examining the expert or challenging her testimony. And they certainly were insufficient to be of much help to me in making a ruling on admissibility of the expert's opinions.

Recently, the Department of Justice has provided supplemental guidance to prosecutors regarding the disclosure of forensic evidence and experts.[13] Commendably, it emphasizes that "prosecutors must ensure that they satisfy their discovery obligations regarding forensic evidence and experts, so that defendants have a fair opportunity to understand the evidence that could be used against them."[14] And, it clarifies that there are three distinct disclosure obligations that the criminal rules impose on prosecutors that relate to forensic evidence: (1) Rule 16(a)(1)(F) (the duty to turn over the results or reports of any scientific test or experiment); (2) Rule 16(a)(1)(G) (the duty to provide a written summary of expert testimony the government intends to use at trial); and (3) Rule 16(a)(1)(E) (more broadly requiring production of documents and items material to preparing the defense).[15] Helpfully, the DOJ Supplemental Guidance stresses that these disclosure obligations (augmented by others that may be required by the Jencks Act,[16] or the *Brady*[17]and *Giglio*[18] decisions) "are the minimum requirements, and the Department's discovery policies call for disclosure beyond these thresholds."[19]

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[13] Memorandum from Sally Q. Yates, Deputy Attorney General, to Department Prosecutors, *Supplemental Guidance for Prosecutors Regarding Criminal Discovery Involving Forensic Evidence and Experts*, January 5, 2017, available at justice.gov/archives/ncfs/page/file/93o411/download (hereinafter "DOJ Supplemental Guidance").
[14] DOJ Supplemental Guidance 1.
[15] *Id.*
[16] 18 U.S.C. § 3500.
[17] *Brady v. Maryland*, 373 U.S. 83 (1963).
[18] *Giglio v. United States*, 405 U.S. 150 (1972).
[19] *Id.*

In addition, the DOJ Supplemental Guidance recommends that DOJ prosecutors obtain the forensic examiner's laboratory report and turn it over to the defense if requested; that the written summary required by Rule 16(a)(1)(G) should "summarize the analyses performed by the forensic expert and describe any conclusions reached" and should "be sufficient to explain the basis and reasons for the expert's expected testimony."[20] Further, prosecutors are encouraged to provide the defense with " a copy of, or access to, the laboratory of forensic expert's 'case file,'" which "normally will describe the facts or data considered by the forensic expert, include the underlying documentation of the examination or analysis performed, and contain the material necessary for another examiner to understand the expert's report.[21]"

The DOJ Supplemental Guidance, if it continues as DOJ policy, and to the extent that line prosecutors adhere to it, will go a long way to bolster the anemic disclosure requirements currently found in Rule 16(a)(1)(G). But the effectiveness of the DOJ Supplemental Guidance is muted by its narrow application to forensic evidence and expert reports, as opposed to the many other types of expert testimony (referenced above) that are common to criminal prosecutions.

Suggestions for Trial Judges

So, what's a trial judge to do to overcome the challenges discussed above when called on to make rulings regarding the admissibility of expert testimony in criminal cases? The starting point is to have firmly in mind the two things that a judge must have in order to make proper rulings: (1) the underlying facts related to the challenged evidence; and (2) sufficient time to digest the facts, and make a principled ruling.

[20] *Id.* at 2.
[21] *Id.* at 3.

Fortunately, judges have the inherent authority to ensure that they get what they need to do the job.

1. Address disclosure of expert opinions early in the case

Fed. R. Crim. P. 17.1 states: "On its own, or on a party's motion, the court may hold one or more pretrial conferences to promote a fair and expeditious trial. When a conference ends, the court must prepare and file a memorandum of any maters agreed to during the conference." This rule allows a judge to schedule a preliminary pretrial conference early—right after the defendant has been arraigned. At that time, the court can discuss the case in general, get details from the attorneys about the status of discovery, set deadlines for getting discovery done, and inquire about likely expert testimony. While the government might take the position that it is too early to have made firm decisions about trial experts, a judge must be prepared to take this with a grain of salt. After all, the prosecutor has supervised the investigation and charging of the defendant, and that includes presenting witnesses to the grand jury. It takes an inexperienced (or disingenuous) prosecutor to claim that he has no idea during the early stage of a case about what kind of expert testimony may be offered. The goal is not to lock them in too early, but to raise the issue so that the court can set a reasonable schedule for when expert disclosures will be made, motions *in limine* challenging experts filed, and a hearing (if needed) scheduled sufficiently far in advance of trial so that the judge has adequate time to make a thoughtful ruling.

2. Make your expectations about expert disclosures clearly know at the outset

Judges should feel free to let counsel for the government and defendant know at the start of the case that they will insist on compliance with both the letter and spirit of

what Rule 16 requires for expert disclosures. While the shortcomings of Rule 16 itself have been discussed above, the judge can get valuable assistance from the advisory committee notes that supplement the rule. For example, the advisory committee notes to the 1993 amendments to Rule 16 are especially helpful. The following are a sampling of the useful guidance they afford:

a. *The amendment [to Rule 16] is intended to minimize surprise that often results from unexpected expert testimony, reduce the need for continuances and provide the opponent with a fair opportunity to test the merit of the expert's testimony through focused cross-examination.*

When combined with the language of Rule 17.1, this supports the judge's ability to build into the pretrial schedule reasonable deadlines (reached after consulting with counsel) for making expert disclosures, filing motions *in limine*, and scheduling an evidentiary hearing if needed. It further underscores the ability of a judge to advise the lawyers for both the government and the defendant that it will insist that the exert disclosures be detailed, meaningful, complete, and not boilerplate or conclusory. Otherwise, they will be useless to minimize the risk of surprise and continuance requests. And boilerplate expert disclosures do not provide a fair opportunity to test the expert's opinions or effectively cross-examine.

b. *With the increased use of both scientific and nonscientific expert testimony, one of counsel's most basic discovery needs is to learn that an expert is expected to testify. . . . This is particularly important if the expert is expected to testify on matters which touch on new or controversial techniques or opinions. The amendment is intended to meet this need by first, requiring notice of the expert's qualifications which in turn will permit the requesting party to determine whether in fact the witness is an expert within the definition of Federal Rule of Evidence 702.*

This advisory note language is important because so many experts in criminal trials testify to non-scientific matters (fingerprint analysis, bite mark analysis, tool mark evidence, ballistic evidence). The Rule 16 disclosures need to be detailed enough so that

these kinds of non-scientific opinion testimony (for which there may not be peer review literature, known testing procedures, established error rates, or standard testing protocols) can be explored by counsel and brought to the attention of the court when ruling on any challenge to the evidence.

c. *[T]he requesting party is entitled to a summary of the expected testimony. This provision is intended to permit more complete pretrial preparation by the requesting party. For example, this should inform the requesting party whether the expert will be providing only background information on a particular issue or whether the witness will actually offer an opinion.*

It is clear that in order for the Rule 16 disclosure to fulfill this purpose, it must be detailed, not boilerplate, and set forth each discrete opinion the expert is expected to give, as well as the factual basis supporting it. The judge should make it clear to counsel that this level of detail is required. This can be enforced by ordering that expert disclosures also be filed with the court by a specific date, and then holding a status conference (in person or by telephone) once they have been provided to discuss whether the disclosures are sufficiently detailed. If not, the court can order that they be supplemented.

d. [Rule 16] requires a summary of the bases relied upon by the expert. That should cover not only written and oral reports, tests, reports, and investigations, but any information that might be recognized as a legitimate basis for an opinion under federal Rule of Evidence 703, including opinions of other experts.

Once again, this advisory note language underscores the obligation to include detailed information, not conclusory boilerplate, in expert disclosures. Judges who make sure the attorneys know this early in the case are more likely to see substantive disclosures, which will fulfill the purpose of the disclosure rule, and make it easier for the judge to make admissibility rulings.

3. Know where to look for helpful information to give you the background needed to rule on admissibility of expert testimony.

If the Rule 16 expert disclosures and the briefing by counsel on a motion to exclude (or admit) expert testimony in a criminal trial do not provide the judge with enough information to fulfill her gatekeeping role under *Daubert* and Rule 702, where can the judge turn to find publicly available information to feel better prepared to rule? Fortunately, there are many reference materials that are available. I will highlight three.

One of the best is the Reference Manual on Scientific Evidence (Third Edition) prepared by the Federal Judicial Center and the National Research Council.[22] It contains an excellent discussion of the legal standards for admissibility of expert testimony, a discussion of how science works, as well as reference guides on: forensic identification; DNA identification evidence; statistics; multiple regression, survey research, estimation of economic damages, epidemiology, toxicology, medical testimony, neuroscience, mental health evidence, and engineering. Each reference guide is written to be understandable to lay readers, comprehensive enough to give the reader a real feel for the issues associated with the discipline discussed, and yet not so long that they cannot be read in a reasonably short period of time. Each contains references to other helpful materials that may be consulted for more information.

Because forensic evidence is prevalent in criminal cases, two reports on this subject may be very helpful. The most recent is the September, 2016 Report to the President from the President's Council of Advisors on Science and Technology ("PCAST") titled "*Forensic Science in Criminal Courts: Ensuring Scientific Validity of*

[22] Reference Manual on Scientific Evidence (3d ed., Fed. Judicial Ctr. & Nat'l Research Council 2011).

Feature-Comparison Methods."[23] The PCAST Forensic Evidence Report contains thorough discussions regarding the following forensic feature-comparison methodologies: DNA analysis (single source samples, simple-mixture source samples, and complex-mixture source samples); bitemark analysis; latent fingerprint analysis; firearms analysis; footwear analysis; and hair analysis.

The second is the National Research Council's February, 2009 Report titled *"Strengthening Forensic Science in the United States, A Path Forward."*[24] In addition to a useful discussion about what forensic science is and the legal standards for admitting forensic evidence in court cases, it contains helpfully detailed discussions about the following forensic science disciplines: biological evidence; analysis of controlled substances; friction ridge analysis; shoeprint and tire track analysis; toolmark and firearms identification; hair evidence analysis; fiber evidence analysis's questioned document examination; paint and coatings analysis; explosives and fire debris evidence; forensic odontology; bloodstain pattern analysis; and digital and multimedia analysis.

These three references are especially helpful to judges faced with ruling on admissibility of expert evidence in criminal trials. They provide sufficient background information to allow a judge to understand the critical evidentiary issues with various types of recurring expert evidence in criminal cases. When combined with research on court decisions discussing admissibility of expert evidence in criminal cases, a judge can feel well prepared to make a ruling, even if the Rule 16 disclosures and filings of the parties are insufficient in themselves to enable the judge to rule.

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[23] Available at https://obamawhitehousearchives.gov/sites/default/files/microsites/ostp/pcast/pcast_forensic_science_report_final.pdf.

[24] Available at https://www.ncjrs.gov/pdffiles1/nj/grants/228091.pdf.

4. Recommended Amendment to Fed. R. Crim. P. 16

The final suggestion as to what could make life easier for trial judges and counsel alike, is a recommendation that the Criminal Rules Advisory Committee consider amending Rule 16 to enhance the Rule 16(a)(1)(G) and (b)(1)(C) expert disclosures. Specifically, the Committee should consider whether they should be made to more closely resemble the disclosures required in civil cases by Fed. R. Civ. P. 26(a)(2). At a minimum, Rule 16 disclosures should include: (1) a complete statement of each opinion the expert will testify to, as well as the basis and reasons supporting them; (2) a summary of the facts or data considered (not just relied on) by the witness in forming his or her opinions; and (3) a description of the witness's qualifications. In addition, while less important, it would also bolster Rule 16 if the disclosures included a list of cases in the past 4 years where the witness had testified (allowing counsel to read the prior testimony), and a copy of any exhibits that will be used by the expert in support of his or her testimony.

Conclusion

Determining the admissibility of expert testimony can be a challenge to trial judges under the best of circumstances. But in criminal cases, there are additional challenges the judge faces in doing so. Understanding what these challenges are and how best to meet them can make life much easier for the judge. In addition, fortifying Fed. R. Crim. P. 16's expert disclosure requirements to make them more like the more helpful ones found at Fed. R. Civ. P. 26(a)(2) would also greatly improve things.

MEMO TO: **Rule 16 Subcommittee**

FROM: **Professors Sara Sun Beale and Nancy King, Reporters**

RE: **Pretrial disclosure of expert testimony (17-CR-B) & (17-CR-D)**

DATE: **March 14, 2018**

This memorandum provides background information for the Subcommittee's call on March 27 at 2:30 EST. It describes the two proposals to amend Rule 16 to provide more complete pretrial disclosure of expert testimony, and it provides background concerning the legislative history of the relevant portion of Rule 16.

Discussion of the first of these proposals, by Judge Jed Rakoff, was tabled at the October Rules Committee meeting because of a concern that the Evidence Rules Committee might propose revisions concerning expert testimony that would be relevant to pretrial disclosures under Rule 16.

There have been two changes since the October meeting. First, the reporters and Judge Molloy were informed by Judge Debra Livingston, chair of the Evidence Committee, and Professor Dan Capra, the reporter, that they see no impediment to consideration of changes in Rule 16. Second, the Criminal Rules Committee received a second proposal to amend Rule 16, authored by Judge Paul Grimm, a former member of the Advisory Committee on Civil Rules.

Accordingly, Judge Molloy requested a Subcommittee teleconference to discuss the two proposals before the April meeting, where the question will be whether the Committee should undertake detailed consideration of amending the provisions governing pretrial disclosure of expert testimony.

The proposals

Judge Jed Rakoff (17-CR-B), co-chairman of the National Commission on Forensic Science, wrote suggesting that the Committee consider amending Rule 16(a)(1)(G) to parallel Civil Rule 26(a)(2)(B) governing pretrial disclosure of the testimony to be given by expert witnesses.

Judge Rakoff explained that the provisions of Rule 16 are couched in much vaguer language than the parallel provisions of Rule 26 of the civil rules, and as a result (as the caselaw

and everyday experience both attest) pre-trial expert disclosures in federal criminal cases are frequently much more minimal than the comparable expert disclosures in civil cases. This poses a serious problem: counsel are frequently blindsided by expert testimony given in criminal cases. Judge Rakoff also noted that research has tied inaccurate expert testimony to wrongful convictions, including those later exposed by DNA testing.

These concerns led the National Commission on Forensic Science overwhelmingly to approve a recommendation to the Department of Justice that the Department, notwithstanding the vague language of Rule 16, voluntarily agree to make the same kind of disclosures in federal criminal cases as Rule 26 of the federal civil rules mandates in civil cases.

Although the Department accepted the National Commission's recommendation and issued a memorandum to federal prosecutors in January, 2017, Judge Rakoff nonetheless advocates an amendment to the Rules of Criminal Procedure for several reasons. First, the DOJ memorandum does not have the force of law; if the government fails to comply, the defense cannot seek judicial enforcement or any other remedy. Second, there has been and likely will continue to be very wide variance among U.S. Attorney's Offices, and even among individual AUSAs, as to how much or little has to be disclosed before an expert witness is called to testify in a federal criminal case. Seeing no reason why pretrial disclosure of expert testimony should be any more restricted in criminal than civil cases, Judge Rakoff recommends an amendment to Rule 16 to parallel Civil Rule 26(a)(2)(B). His suggestion would also affect all government experts, not just the forensic experts addressed by the National Commission and the Department's new guidance to prosecutors. Disclosure by the government under Rule 16(a)(1)(G) is triggered by a defense request, which in turn triggers a reciprocal obligation for defense discovery under Rule 16(b)(1)(C). Judge Rakoff did not address defense discovery.

Judge Paul Grimm (17-CR-D) provided the Committee with a short article proposing that Fed. R. Crim. P. 16 be amended to parallel more closely Civil Rule 26(a)(2)'s requirements for pretrial discovery of expert testimony. Judge Grimm begins (pp. 4-11) with a description of the challenges district judges face in making expert admissibility rulings in criminal cases: the pressure of the speedy trial requirements, the breadth of expert testimony introduced in criminal cases, the pressure on defendants to plead guilty quickly, and difficulty in obtaining defense experts. The final factor, in Judge Grimm's view, is the "[i]nsufficiently detailed disclosure of expert witnesses under the criminal procedure rules." (pp.11-15). After comparing Rule 16(a)(1)(G) with Civil Rule 26(a)(2)(A) and (B), he concludes (p. 13) that "the expert disclosures required by the rules of civil procedure are far more robust, detailed and helpful to the recipient than those required by the criminal procedure rules."

In practice, Judge Grimm concludes (p. 13-14), expert discovery in criminal cases is inadequate from the perspective of both the defense and the court:

> . . . In contrast to the comprehensive disclosures in civil cases, in criminal cases, most of the expert disclosures I have seen (and remember that the trial judge does not see the disclosure unless there is a challenge, because the disclosure only is served on the defense attorney, not

> docketed on the court record) were cursory as well as conclusory, and not particularly useful for cross-examining the expert or challenging her testimony. And they certainly were insufficient to be of much help to me in making a ruling on admissibility of the expert's opinions.

Like Judge Rakoff, Judge Grimm notes that the DOJ Guidance is helpful but not sufficient. He observes (p. 15):

> The DOJ Supplemental Guidance, if it continues as DOJ policy, and to the extent that line prosecutors adhere to it, will go a long way to bolster the anemic disclosure requirements currently found in Rule 16(a)(1)(G). But the effectiveness of the DOJ Supplemental Guidance is muted by its narrow application to forensic evidence and expert reports, as opposed to the many other types of expert testimony (referenced above) that are common to criminal prosecutions.

Accordingly, Judge Grimm recommends (p. 21) "that the Criminal Rules Advisory Committee consider amending Rule 16 to enhance the Rule 16(a)(1)(G) and (b)(1)(C) expert disclosures," making the Criminal Rule "more closely resemble the disclosures required in civil cases by Fed. R. Civ. P. 26(a)(2)."

> At a minimum, Rule 16 disclosures should include: (1) a complete statement of each opinion the expert will testify to, as well as the basis and reasons supporting them; (2) a summary of the facts or data considered (not just relied on) by the witness in forming his or her opinions; and (3) a description of the witness's qualifications. In addition, while less important, it would also bolster Rule 16 if the disclosures included a list of cases in the past 4 years where the witness had testified (allowing counsel to read the prior testimony), and a copy of any exhibits that will be used by the expert in support of his or her testimony.

The Issue for Discussion

The question is whether to recommend that the Advisory Committee undertake a full examination of these two suggestions. We describe below previous committee action on the rule that may be relevant. Judge Rakoff's transmittal email (including the report of the National Commission, and the memorandum from Deputy Attorney General Sally Yates) and Judge Grimm's transmittal email (including his article) are included with our email to the Subcommittee.

Previous Committee Action

The difference in the scope of pretrial disclosure concerning expert witnesses arose in 1993, when both the Civil and Criminal Rules were amended to address this issue.[1] Rule

[1]As the Committee's June 1991 report to the Standing Committee explained at page 2: "The proposed amendments [to Rule 16] would generally parallel similar provisions in Federal Rule of Civil Procedure 26 and would expand discovery to both the defense and the

16(a)(1)(G) requires disclosure by the government of only a written summary of any testimony that the government intends to use under Rules 702, 703, or 705 of the Federal Rules of Evidence during its case-in-chief at trial. It further specifies that "The summary provided under this sub-paragraph must describe the witness's opinions, the bases and reasons for those opinions, and the witness's qualifications." As Judge Rakoff explained, these summaries may be produced by the prosecutor, not the witness, and in some instances are extremely short and general (a paragraph or two). Also, as Judge Grimm noted (p. 13), the Criminal Rule does not require disclosure of the facts or data considered by the expert (not merely those the expert intends to rely on), or the exhibits that will be used to summarize or support the expert's testimony.

In contrast, Civil Rule 26(a)(2)(B) requires that an expert witness who is expected to testify at trial must provide a "written report," and it describes in greater detail what this report must include.[2] It provides (emphasis added):

> **(B) Witnesses Who Must Provide a Written Report.** Unless otherwise stipulated or ordered by the court, this disclosure must be accompanied by a written report prepared and signed by the witness if the witness is one retained or specially employed to provide expert testimony in the case or one whose duties as the party's employee regularly involve giving expert testimony. The report must contain:
>
> > (I) a complete statement of all opinions the witness will express and the basis and reasons for them;
> >
> > (ii) the facts or data considered by the witness in forming them;
> >
> > (iii) any exhibits that will be used to summarize or support them;

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government." This point was also emphasized in the committee note as published, which stated that the addition of the subdivision that is now (b)(1)(G) "tracks closely with similar language in Federal Rule of Civil Procedure 26...."

[2]For a subgroup of witnesses, only a summary is required in civil cases. A witness is not required to provide a written report if he has not been "retained or specially employed to provide expert testimony in the case" or his duties as the party's employee do not "regularly involve giving expert testimony." In these circumstances, Civil Rule 26(a)(2)C) requires only disclosure stating:

> (i) the subject matter on which the witness is expected to present evidence under Federal Rule of Evidence 702, 703, or 705; and
>
> (ii) a summary of the facts and opinions to which the witness is expected to testify.

(iv) the witness's qualifications, including a list of all publications authored in the previous 10 years;

(v) a list of all other cases in which, during the previous 4 years, the witness testified as an expert at trial or by deposition; and

(vi) a statement of the compensation to be paid for the study and testimony in the case.

At the time of publication for public comment in 1990, the Civil and Criminal provisions concerning expert discovery were parallel, but after publication the Criminal Rule was revised at the urging of the Department of Justice. The minutes from the Committee's April 1992 meeting (provided below) state that the Department "expressed strong opposition to the amendment" as published. The Department's representative to the Committee stated there had been no real problems requiring the amendment. But the amendment would cause difficulties if the government did not know in advance of trial which witnesses it would call, especially summary witnesses. Later in the discussion, the representative also expressed concern that the amendment would require the government to present its theory of the case to the defendant before trial.

The language ultimately adopted was presented in a motion to narrow the amendment to respond to the Department's concerns. After the Committee deadlocked 5 to 5 on this vote, the chair voted in favor of the revision, breaking the tie.

The language adopted in 1993 was restyled in 2002 (which resulted in relettering the provision in question).

April 1992 Minutes
Advisory Committee on Criminal Rules
Pages 3-5

* * * * *

2. Rule 16(a). Disclosure of Experts.

The Reporter informed the Committee that the proposed amendment to Rule 16(a) had generated some comments from the public. Several had raised the issue of the scope of the rule, the lack of specific timing requirements, the relationship between this provision and others in Rule 16, and the difficulty of knowing in advance of trial which experts would be called to testify.

Mr. Karas moved that the Rule be approved and forwarded to the Standing Committee for its approval. Mr. Doar seconded the motion.

Mr. Pauley referred to a letter sent by the Justice Department to the Advisory Committee which expressed strong opposition to the amendment. He noted that there did not seem to be any real problems which required the amendment and that the Committee should consider the full panoply of experts that would potentially fall within this amendment. In particular, he noted that "summary" experts would be covered and that the amendment did not cover problems which would arise if the government did not know in advance of trial which witnesses it would call. Judge Hodges noted the Department's letter in opposition to the amendment had been received by the Committee almost two months after the official comment period ended.

Professor Saltzburg endorsed the concept of the amendment. He indicated that the language "at the request of the defendant," should stay in and observed that if problems develop with application there will be time for any further amendments. He indicated that the problem of the parties not knowing who the witnesses would be could be addressed by extending the amendment only to those witness that a party "expected" to call. Mr. Marek echoed Professor Saltzburg's support for the amendment and disagreed with the Department's assertions that defendants are not currently being surprised by government experts.

Judge DeAnda spoke in favor of the amendment and noted that the timeliness requirements would affect both the government and the defense. Judge Jensen added that the underlying concept of the Rule was good but that he was opposed to the requirement for a written report. Mr. Pauley again expressed concern about the amendment and added that it would require the government to present its theory of the case to the defendant before trial.

After some additional discussion on the options available to the Committee, the chair called the question on the existing motion to send the amendment forward as published. That motion failed by a vote of 8 to 2.

Professor Saltzburg then moved that changes be made in the amendment which would address some of the concerns raised during the discussion:

> "At the defendant's request, the government must disclose to the defendant a written summary of testimony the government intends to use under Rules 702, 703 and 705 of the Federal Rules of Evidence as evidence-in-chief at trial. This summary must describe the opinions of the witnesses, the bases and reasons therefor, and the witnesses' qualifications."

Mr. Marek seconded the motion. Mr. Doar expressed some concern about whether the new language should leave out the reference to the underlying data relied upon by the expert witness. Mr. Pauley noted that the new language addressed some of the concerns raised by the Department of Justice but in an extended discussion of the issue, stated that the amendment and the debate it would generate were not needed because currently no problem exists. In his view, the amendment goes far beyond what is necessary and will generate needless litigation. The suggestion wag made that the Committee Note to the amendment note some distinction between non-expert "summary" witnesses.

The Committee's vote on the motion was motion ultimately 5 to 5. But the motion carried on the tie-breaking vote by the Chair, Judge Hodges. Professor Saltzburg then moved that the Committee recommend to the Standing Committee that no further public comment be sought on the amendment. That vote as well was a tie vote (5 to 5) but ultimately carried when the Chair voted in the affirmative.

Professor Saltzburg thereafter moved that conforming changes be made in Rule 16(b)(1)(C), that they be forwarded to the Standing Committee with the recommendation that no further public comment be solicited. That motion was seconded by Mr. Marek and carried by a unanimous vote.

In further discussion on Rule 16, Judge Keenan suggested that the Committee Note should indicate the potential problems with fungible experts and the amendment is not intended to create unreasonable procedural hurdles. Mr. Marek expressed concern about disclosure of experts who are not fungible. It was noted by several members during the ensuing discussion that Rule 16(d) provides an avenue of relief for both sides.

Standing Committee Chair Meeting

From: "Shapiro, Elizabeth (CIV)" <(b) (6) >
To: "Goldsmith, Andrew (ODAG)" <(b) (6) "Antell, Kira M. (OLP)" <(b) (6) "Hunt, Ted (ODAG)" <(b) (6)
Cc: "Hur, Robert (ODAG)" <(b) (6)
Date: Wed, 01 Nov 2017 18:19:43 -0400
Attachment Standing Committee Chair Meeting, Nov 2017 rtf (161 18 kB)

(b)(5) per CIV

circulate today.
Thanks,
Betsy

Use this version instead

From: "Shapiro, Elizabeth (CIV)" <(b) (6) >
To: "Antell, Kira M. (OLP)" <(b) (6) "Goldsmith, Andrew (ODAG)" <(b) (6) "Hunt, Ted (ODAG)" <(b) (6)
Cc: "Hur, Robert (ODAG)" <(b) (6)
Date: Wed, 01 Nov 2017 18:21:31 -0400
Attachment Standing Committee Chair Meeting, Nov 2017 rtf (160 63 kB)

I fixed the outlining.

RE: Use this version instead

From: "Goldsmith, Andrew (ODAG)" <(b) (6)
To: "Shapiro, Elizabeth (CIV)" <(b) (6) >
Cc: "Antell, Kira M. (OLP)" <(b) (6) "Hunt, Ted (ODAG)" <(b) (6) "Hur, Robert (ODAG)" <(b) (6) "Murphy, Marcia (ODAG)" <(b) (6) >
Date: Thu, 02 Nov 2017 10:08:49 -0400
Attachment Standing Committee Chair Meeting Nov 2017 (ADG) rtf (158 86 kB)

Here's a slightly edited version, which we can finalize once we get the new date/time.

From: Goldsmith, Andrew (ODAG)
Sent: Wednesday, November
To: Shapiro, Elizabeth (CIV) <(b) (6) >
C P) <(b) (6) Hunt, Ted (ODAG) <(b) (6) Hur, Robert (ODAG) <(b) (6)
Subject: Re: Use this version instead

Thanks!

Sent from my iPhone - please excuse any typos.

On Nov 1, 2017, at 6:21 PM, Shapiro, Elizabeth (CIV) <(b) (6) wrote:

> I fixed the outlining.
>
> Standing Committee Chair Meeting, Nov 2017 rtf

Standing Committee Chair Meeting Nov 2017 REVISED TIME

From: "Shapiro, Elizabeth (CIV)" <(b) (6)>
To: "Antell, Kira M. (OLP)" <(b) (6)> "Goldsmith, Andrew (ODAG)" <(b) (6)> "Hunt, Ted (ODAG)" <(b) (6)>
Cc: "Hur, Robert (ODAG)" <(b) (6)> "Crowell, James (ODAG)" <(b) (6)>
Date: Thu, 02 Nov 2017 16:58:23 -0400
Attachment Standing Committee Chair Meeting Nov 2017 REVISED TIME rtf (160 41 kB)

(b)(5) per CIV

Betsy

FW: Rule 702 Subcommittee

From: "Shapiro, Elizabeth (CIV)" <(b) (6)>
To: "Hunt, Ted (ODAG)" <(b) (6)>
Date: Thu, 21 Jun 2018 13:05:45 -0400

Ted,
The topic below, which Judge Livingston suggested the subcommittee consider, seems to echo what she was trying to explain to me about the NAS report:

"The NAS Report, which most if not all of you have of course read, but I direct your attention to pages 85-111. In that section, NAS arguably seems to criticize part of the 2000 Committee Note to Rule 702, which cites a case on handwriting and states that experience-based testimony can be reliable. Judge Livingston suggests that the Committee think about whether something can be done to address that passage in the Committee Note. "

From: Daniel Capra (b) (6) fordham edu]
Sent: Wednesday, June 06, 2018 11:11 AM
To A J Kramer (b) (6) fd org
C Collins, Daniel (b) (6) (b)(6) Schroeder US Courts ; Shapiro, Elizabeth (CIV) (b) (6) ; Antell, Kira M (OLP) (b) (6) ;(b)(6) Debra Livingston US Courts
Subject: RE: Rule 702 Subcommittee

Thanks to everyone for responding The conference call will take place at 2 00 p m Eastern time on July 11 I will contact the AO to provide a call-in number.

Joe Cecil is available that day so he will be joining the call about twenty minutes in. Let me know if you have any questions, or if there is anything specific that you want to have raised in the call Best regards to all

From: A. J. Kramer [mailto:(b) (6) fd.org]
Sent: Wednesday, June 06, 2018 7:38 AM
To: Daniel Capra (b) (6) fordham.edu>
Cc: Collins, Daniel <(b) (6)>; Daniel Capra <(b) (6) law.fordham.edu>; (b)(6) Schroeder US Courts <(b) (6)>; Shapiro, Elizabeth (CIV) <(b) (6)>; Antell, Kira M. (OLP) (JMD) <(b) (6)>;(b)(6) Debra Livingston US Courts
Subject: Re: Rule 702 Subcommittee

July 11 afternoon is good for me, anytime. Thanks--

A. J.

Daniel Capra ---06/05/2018 11:55:18 PM---The target for the call is July 11. That will give the committee time to read all the stuff I sent.

From: Daniel Capra <(b) (6) fordham.edu>
To "Collins, Daniel" (b) (6)
C (b) (6) law.fordham.edu (b)(6) Schroeder US Courts <(b) (6)>, (b) (6) @fd.org" <(b) (6) @fd.org> "Shapiro, Elizabeth (CIV)" <(b) (6)> "Antell, Kira M. (OLP) (JMD)" <(b) (6) ;(b)(6) Debra Livingston US Courts" <(b) (6)
D
Subject Re Rule 702 Subcommittee

The target for the call is July 11 That will give the committee time to read all the stuff I sent 😀

Daniel J. Capra
Reed Professor of Law
Fordham Law School
150 West 62nd Street
New York, New York 10023
(b) (6)

Sent from my iPhone

On Jun 5, 2018, at 10:57 PM, Collins, Daniel <[redacted](b) (6)> wrote:

Unfortunately, I am in meetings in New York on the afternoon of June 11. The morning of June 11 would work, and almost any time on June 12 would also work for me.

Regard ,

--Dan

From: Daniel Capra [(b) (6) law.fordham.edu]
Sen
To: (b)(6) Judge Schroeder US Courts; Collins, Daniel; (b) (6) fd.org; Shapiro, Elizabeth (CIV); Ante
Cc (b)(6) Debra Livingston US Courts
Sub

This is a "getting started" email for the Rule 702 Subcommittee appointed by Judge Livingston and chaired by Judge Schroeder I am here to help the subcommittee's work in any way I can

It is my understanding that the Subcommittee is to consider two basic issues:

1 What the Advisory Committee can/should do regarding forensics, which is subdivided into three ques ons
   a. A possible rule amendment to regulate overstatement by experts (maybe all experts, maybe only forensic experts) --- together with a committee note that might speak more broadly about forensics.
   b. A more minor rule amendment, as a kind of coat hanger for an advisory committee note. That note might speak broadly about forensics and/or refer the reader to other sources, such as the FJC manual, NAS report, etc.
   c. Non-rule related ventures, such as working with the FJC on training programs and on the new Manual.

2. A possible amendment to Rule 702 directed mainly to civil cases, restoring the gatekeeping function on the questions of sufficiency of basis and reliability of application. This is in reaction to the many courts that have found these factors in Rule 702 to be questions of weight and not admissibility.

Judge Schroeder and I have conferred and we would like to have **a conference call on the afternoon of July 11,** to talk about how the Subcommittee can meet these goals.

Please let us know by email of available mes you have that a ernoon --- or if you are not available at all.

I will also arrange to have Joe Cecil on the call, so he can give some more background about the FJC manual and training programs

In the mean me, I am attaching a number of things for your reading pleasure:

1 The NAS Report, which most if not all of you have of course read, but I direct your atten on to pages 85 111 In that sec on, NAS arguably seems to cri cize part of the 2000 Committee Note to Rule 702, which cites a case on handwri ng and states that experience-based tes mony can be reliable. Judge Livingston suggests that the Committee think about whether something can be done to address that passage in the Committee Note.

2. The PCAST report, which I attach only for the references to Rule 702 and the Advisory Committee. In the sec on from pages 40-43, PCAST suggests that the Rule 702 Note actually is sufficient for courts to use to regulate forensic expert tes mony. What PCAST suggests, in the recommenda ons sec on, is not a retroac ve change in that Note, but rather a detailed best prac ces manual by way of an Advisory Committee Note

3. A recent ar cle by Professor Paul Giannelli on forensic evidence --- Professor Giannelli was a co-author of the current FJC manual chapter on forensics

4. An ar cle by Erin Murphy describing findings on the difference in the courts in applying Daubert in civil and criminal cases.

5. A recent note from the NYU Law review on how to resolve the problem of judicial deference to forensic

evidence.

6. An ar cle by Jane Moriarty on the asymmetry in applica on of Daubert in civil and criminal cases and how the NAS report might be used to address that.

7. A short memo by me, laying out drafting alterna ves to address the two issues that the Subcommittee has on its agenda.

Finally, there is no specific deadline for the Subcommittee's work, but we would like to at least be able to report on progress at the October mee ng.

Please let me know if you have any ques ons or comments. I look forward to working with you, and to talking with you on July 11.

Daniel J. Capra
Reed Professor of Law
Fordham Law School
New York, New York
(b) (6)

RE: Rule 702 Subcommittee

From: "Shapiro, Elizabeth (CIV)" <(b) (6)>
To: "Hunt, Ted (ODAG)" <(b) (6)>
Cc: "Antell, Kira M. (OLP)" <(b) (6)>
Date Thu, 21 Jun 2018 14 44 09 0400

Ted, copying Kira. We should set a time to discuss in advance of our July 11th subcommittee call. It would be great to have some talking points going into the call

From: Hunt, Ted (ODAG)
Sent Thursday, June 21, 2018 1 43 PM
To: Shapiro, Elizabeth (CIV) <(b) (6)>
Subject RE Rule 702 Subcommittee

I see. And I did notice that part of the Committee note. As you know, there's an enormous amount of case law built on the proposition that, with sufficient foundation, experience based expert testimony is admissible. (b) (5)

[redacted]

From: Shapiro, Elizabeth (CIV)
Sent: Thursday, June 21, 2018 1:06 PM
To: Hunt, Ted (ODAG) <(b) (6)>
Subject: FW: Rule 702 Subcommittee

Duplicative Material see bates stamp 20220314-16403

Evidence minutes

From: "Shapiro, Elizabeth (CIV)" <(b) (6)>
To: "Hunt, Ted (ODAG)" <(b) (6)> "Antell, Kira M. (OLP)" <(b) (6)>
"Goldsmith, Andrew (ODAG)" <(b) (6)> "Hur, Robert (USAMD)" <(b) (6)>
Date: Thu, 31 May 2018 15:55:10 -0400
Attachments: evidence meeting minutes.pdf (298.11 kB)

Attached are the minutes from April's Evidence committee meeting – enjoy!

RE: Advisory Committee on Rules of Evidence, agenda materials for October 26-27, 2017 meeting

From: "Antell, Kira M. (OLP)" <(b) (6)
To: "Shapiro, Elizabeth (CIV)" <(b) (6)>
Cc "Hunt, Ted (ODAG)" (b) (6) "Gold mith, Andrew (ODAG)" <(b) (6)
Date Sat, 30 Sep 2017 16 28 11 0400
Attachments: Evett et al, Finding the Way Forward, FS International (2017).pdf (418.04 kB); Budowle Response to PCAST Report 06 17 2017 (002) pdf (521 58 kB)

Thanks Betsy.

(b)(5)

Thanks,
Kira

From: Shapiro, Elizabeth (CIV)
Sent: Friday, September 29 2017 1:44 PM
To: Antell, Kira M. (OLP) (b) (6) >
Cc: Hunt, Ted (ODAG) <(b) (6) oldsmith, Andrew (ODAG) <(b) (6)
Subject: RE: Advisory Committee on Rules of Evidence, agenda materials for October 26-27, 2017 meeting

Yes. I will definitely ask for that. I can bring copies myself, too.

From: Antell, Kira M (OLP)
Sent: Friday, September 29, 2017 12:22 PM
To Shapiro, Elizabeth (CIV) (b) (6)
Cc: Hunt, Ted (ODAG) < (b) (6) Goldsmith, Andrew (ODAG) < (b) (6)
Subject Re Advisory Committee on Rules of Evidence, agenda materials for October 26 27, 2017 meeting

Betsy,

(b)(5)

Sent from my iPhone

On Sep 29, 2017, at 11:58 AM, Goldsmith, Andrew (ODAG) < (b) (6) wrote:

> Thank ; note that the entire 170+ page PCAST report i included with the material for the Sympo ium.
>
> **From:** Hur, Robert (ODAG)
> **Sent:** Friday, September 29, 2017 11:49 AM
> **To** Goldsmith, Andrew (ODAG) (b) (6) ; Hunt, Ted (ODAG) (b) (6)
> **Cc:** Crowell, James (ODAG) < (b) (6) >; Shapiro, Elizabeth (CIV) < (b) (6)
> **Subject** FW Advisory Committee on Rules of Evidence, agenda materials for October 26 27, 2017 meeting
>
> Andrew and Ted,
>
> FYI.
>
> Thanks,
> Rob
>
> **From:** (b)(6) Bridget Healy US Courts [(b) (6)]
> **Sent:** Fr day September 29, 2017 9:27 AM
> **To:** (b)(6) Debra Livingston US Courts (b) (6) ; (b) (6) @law.fordham.edu; (b)(6) Bassett US Courts (b) (6) ;

(b) (6) @mto.com; Hur, Robert (ODAG) <[redacted]>; (b) (6) @fd.org; (b) (6) @jonesday.com; (b)(6) Marten US Courts; (b)(6) Shelly Dick US Courts; (b)(6) Schroeder US Courts; (b) (6) @ou.edu; (b)(6) William Sessions US Courts

Cc (b)(6) James Dever US Courts; (b)(6) Lyndsay Hayes US Courts; (b)(6) Sara Lioi US Courts; Shapiro, Elizabeth (CIV) <[redacted]>; (b)(6) David Campbell US Courts; (b)(6) Nancy Outley US Courts; (b) (6) @law.harvard.edu; (b) (6) @bc.edu; (b) (6) @court tat h u ; (b)(6) Barbara Alcon US Courts; (b)(6) Kathy Stephenson US Courts; (b)(6) Jeanette Santos US Courts; (b)(6) Krystle Dalke US Courts; (b) (6) @fjc.gov; Brown, Angela M. (ODAG) [redacted] ; (b)(6) Rebecca Womeldorf US Courts; (b)(6) Patrick Tighe US Courts

Subject Advisory Committee on Rules of Evidence, agenda materials for October 26 27, 2017 meeting

Dear Committee members and invited guests,

The agenda materials are now available on uscourts.gov at the following link: http://www.uscourts.gov/rules-policies/archives/agenda-books/advisory-committee-rules-evidence-october-2017. Please let our office know if you have any issues accessing or downloading the materials. We look forward to seeing you in Boston!

Sincerely,

Bridget Healy
Attorney Advisor
Office of General Coun el, Rule Committee Staff
(b) (6)
(b) (6)

Re: Advisory Committee on Rules of Evidence, agenda materials for October 26-27, 2017 meeting

From: "Shapiro, Elizabeth (CIV)" (b) (6)
To: "Antell, Kira M. (OLP)" <(b) (6)
Cc "Hunt, Ted (ODAG)" (b) (6) "Gold mith, Andrew (ODAG)" (b) (6)
Date: Sat, 30 Sep 2017 18:09:19 -0400

Agreed

Sent from my Verizon, Samsung Galaxy smartphone

-------- Original message --------
From "Antell, Kira M (OLP)" (b) (6)
Date: 9/30/17 4:28 PM (GMT-05:00)
To: "Shapiro, Elizabeth (CIV)" <(b) (6) >
Cc: "Hunt, Ted (ODAG)" <(b) (6) n, Andrew (ODAG)" <(b) (6)
Subject RE Advi ory Committee on Rule of Evidence, agenda material for October 26 27, 2017 meeting

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Review Article

Finding the way forward for forensic science in the US—A commentary on the PCAST report

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ABSTRACT

A recent report by the US President's Council of Advisors on Science and Technology (PCAST), (2016) has made a number of recommendations for the future development of forensic science. Whereas we all agree that there is much need for change, we find that the PCAST report recommendations are founded on serious misunderstandings. We explain the traditional forensic paradigms of *match* and *identification* and the more recent foundation of the logical approach to evidence evaluation. This forms the groundwork for exposing many sources of confusion in the PCAST report. We explain how the notion of treating the scientist as a black box and the assignment of evidential weight through error rates is overly restrictive and misconceived. Our own view sees inferential logic, the development of calibrated knowledge and understanding of scientists as the core of the advance of the profession.

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In Memoriam

This paper is dedicated to the memory of Bryan Found who did so much to advance the profession of forensic scientist through his work on calibrating and enhancing the performance of experts under controlled conditions. He will be sorely missed.

1. Introduction

This paper is written in response to a recent report on forensic science of the US President's Council of Advisors on Science and Technology (PCAST) [1]. There have already been several responses to the report from the forensic community [2 7] which have resulted in an addendum to the report [8]. Our main concern is that the report (and its addendum) fails to recognise the advances in the logic of forensic inference that have taken place over the last 50 years or so. This is a serious omission which has led PCAST to a narrowly focussed and unhelpful view of the future of forensic science.

The structure of our paper is as follows. In Section 2 we briefly outline our view of the requirements imposed by logic on the assessment of the probative value of evidence. This allows us to set up a framework against which we can contrast some of the suggestions of the report. In Sections 3 and 4 we briefly explain the notions of "match" and "identification" paradigms that have underpinned much of forensic inference over the last century or so. Section 5 will point out misconceptions, fallacies, sources of confusion and improper terminology in the PCAST report. Our contrasting view of the future path for forensic science follows in Section 6.

2. The logical approach

Much has been written over the past 40 years on inference in forensic science. The frequency of appearance of articles, papers and books on the topic has increased markedly in recent years. Practically all of this material is founded on a logical, probabilistic approach to the assessment of the probative value of scientific observations [9,10]. The PCAST report mentions this body of work only briefly and pays scant attention to its principles [11], which we list and explain briefly as follows.

2.1. Framework of circumstances

It is necessary to consider the evidence within a framework of circumstances.

A simple example will illustrate this. Imagine that a sample[1] has been obtained from a crime scene which yielded a DNA profile from which the genotype of the originator of the sample has been inferred. A suspect for the crime is known to have the same genotype. Because the alleles revealed by a DNA profile will be found in different proportions in different ethnic groups, it is relevant to the assessment of the probative value of this correspondence of genotypes that a credible eyewitness of the crime said that the offender was of a particular ethnic appearance.

It follows that, when presenting an evaluation, the scientist should clearly state the framework of circumstances that are relevant to their assessment of the probative value of the observations, with a caveat that, if details of the circumstances change, the evaluation must be revisited.

2.2. Propositions

The probative value of the observations cannot be assessed unless two propositions are addressed.

In a criminal trial, these will represent what the scientist believes the prosecution may allege and a sensible alternative that represents the defence position.[2] In taking account of both sides of the argument, the scientist is able to assess the evidence in a balanced, justifiable way and display to the court an unbiased approach, irrespective of which side calls the witness.

Propositions may be formed at any of at least four levels in a hierarchy of propositions [12 14]. These levels are termed offence, activity, source and sub source. We do not discuss these in any depth here. Most of the PCAST report appears to address questions at the source or sub source level. Examples of these would be:

1. Sub source: The DNA came from the person of interest (POI),[3] or
2. Source: This fingermark was made by the POI.

2.3. Probability of the observations

It is necessary for the scientist to consider the probability[4] *of the observations given the truth of each of the two propositions in turn.*

The ratio of these two probabilities is widely known as the *likelihood ratio* (LR) and this is a measure of the weight of evidence that the observations provide in addressing the issue of which of the propositions is true. A likelihood ratio greater than one provides support for the truth of the prosecution proposition. A likelihood ratio less than one provides support for the truth of the defence proposition.

It cannot be sufficiently emphasized that it is the scientist's role to provide expert opinion on the probability of the *observations* given the proposition. The role of assigning a value to the probability of the *proposition* given the observations is that of the jury in a criminal trial. This probability will take account, not just of the scientific observations, but also of all of the other evidence presented at court.

[1] The term "sample" is used generically to describe what is available for forensic examination. The term is not used here to suggest any statistical sampling process.

[2] We recognise that the scientist, particularly at an early stage of proceedings, may not know the position that defence will take. It is common practice for the scientist to adopt what appears to be a reasonable proposition, given what is known of the circumstances—making it clear that this is provisional and subject to change at any time.

[3] A source level DNA proposition would specify the nature of the recovered material, e.g. "the semen came from the POI".

[4] This could be a probability density, depending on the nature of the observations. But the principle remains unchanged.

3. The match paradigm

In most forensic comparisons, one of the items will be from a known origin (such as: a reference sample for DNA profiling from a particular individual; a pair of shoes from a suspect; a set of control fragments of glass from a broken window). The other will be from an unknown, or disputed origin (such as: DNA recovered from a crime scene; a footwear mark from the point of entry at a burglary; or a few small fragments of glass recovered from the clothing of a suspect). It is convenient to refer to these as the *reference* and *questioned* samples, respectively. The matter of interest to the court relates to the origin of the questioned sample. This question will be addressed scientifically by carrying out observations on both samples. These observations may be purely qualitative: such as, for example, the shapes of the loops of letters such as "y" and "g" in a passage of handwriting. They may be quantitative and discrete, such as the alleles in a DNA STR profile. Or they may be quantitative and continuous, such as the refractive index of glass fragments. The match paradigm calls for a judgement, by the scientist, as to whether or not the two sets of observations agree within the range of what would be expected if the questioned sample had come from the same origin as the reference sample. The basis for that judgement may, in the case of quantitative observations, be based on a set of pre determined criteria; but where the observations are qualitative such criteria may be vague or purely judgemental.

If the two sets of observations are considered to be outside the range of what may have been expected if the two samples had come from the same source then the result may be reported as a "non match". Depending on the nature of the observations, this provides the basis for a strong implication that the questioned and reference samples came from different sources. In many instances this conclusion will be non controversial in the sense that prosecution and defence will be content to accept it.

However, when the result of the comparison is a "match" it does not logically follow that the two samples do share the same source or even that they are likely to be from the same source. It is possible that the two samples came from two different sources that, by coincidence, have similar properties. Throughout the history of forensic science there has been the notion often imperfectly expressed that the smaller the probability of such a coincidence, the greater the evidential value to be associated with the observed match. In DNA profiling, for example, we encounter the notion of a "match probability". The implication of this approach is that the jury should assign an evidential weight that is related to the inverse of the match probability.

The logical approach has done much to clarify the rather woolly inference that historically has been associated with the match paradigm but it has also demonstrated the considerable advan tages of the single stage approach implied by the assignment of weight through the calculation of the likelihood ratio, over the rather clumsy and inefficient two stage approach implied by the match paradigm. This has already been pointed out by Morrison et al. [4].

4. The identification paradigm

Historically, fingerprint comparison was seen to be the gold standard by which the power of any other forensic technique could be judged. The paradigm here was the notion of "identification"[5] or "individualization" (the terms are used synonymously here). Provided that sufficient corresponding detail was observed, the outcome of a comparison between a fingermark of questioned origin and a print taken from a known person would be reported as a categorical opinion: the two were definitely made by the same person.

So, the match and identification paradigms are related with the difference that in the latter the scientist is allowed to state that the match probability is so infinitesimally small that it is reasonable to conclude that the two items came from the same source. Historically, many examiners would have claimed that the source was established with certainty to the exclusion of all others.

The identification paradigm went largely unchallenged for many years until later in the 20th century when its logical basis was questioned (see, for example, [16] or more recently [17,18]) and also when, in a number of high profile cases, misidentifications with serious consequences were exposed.

An example of the paradigm is given in box 6, p. 137 of the PCAST report (DOJ proposed uniform language) (emphasis added).

> The examiner may state that it is his/her opinion that the shoe/tire *is the source of the impression* because there is sufficient quality and quantity of corresponding features such that the examiner would not expect to find that same combination of features repeated in another source. This is the highest degree of association between a questioned impression and a known source.

The PCAST report rightly indicates that the conclusions conveying "100 percent certainty" or "zero or negligible error rates" are not scientifically defensible. Such conclusions tend to overestimate the weight to be assigned to the forensic observations.

5. Misconceptions, fallacies and confusions in the PCAST report

The most serious weakness in the PCAST report is their flawed paradigm for forensic evaluation. Unfortunately, the report contains more misconceptions, fallacies, confusions and improper wording. In this section we will discuss the main problems with the report.

5.1. Confusion between the match and identification paradigms

This is the first source of confusion in the report. For example, from p. 90 of the report (emphasis added):

> An FBI examiner concluded with "100 percent certainty" that the fingerprint *matched* Brandon Mayfield . . . even though Spanish authorities were unable to confirm the *identification.*

On p. 48 we find (emphasis added):

> To meet the scientific criteria of foundational validity, two key elements are required:
> (1) a reproducible and consistent procedure for (a) identifying features within evidence samples; (b) comparing the features in two samples; and (c) determining based on the similarity between the features in two samples, whether the samples should be declared to be a proposed *identification* ("*matching rule*").

We have seen that declaring a match and declaring an identification are not the same thing. Declaring a match implies nothing about evidential weight whereas declaring an identifica tion implies evidential weight amounting to complete certainty.

The PCAST report proposes an approach that is fusion of the match and identification paradigms. See, from p. 45/46:

[5] Kirk [15] defined the term identification as only placing an object in a restricted class. The criminalist would, for example, identify a particular mark as a fingerprint. Individualization was defined by Kirk as establishing which finger left the mark. An opinion of the kind "this latent mark was made by the finger which made this reference print" is an individualization.

> Because the term "match" is likely to imply an inappropriately high probative value, a more neutral term should be used for an examiner's belief that two samples came from the same source. We suggest the term "proposed identification" to appropriately convey the examiner's conclusion, along with the possibility that it might be wrong. We will use this term throughout the report.

If a scientist says that the questioned and reference samples match, the immediate inference to be drawn from this (as we have explained) is that they might have come from the same source but it is also true that they might not have come from the same source. These two statements make no implication with regard to evidential weight. Weight only comes from the second stage of the paradigm which entails coming up with some impression of rarity. The identification paradigm, on the other hand, is different in that implies a statement of certainty: the two samples certainly came from the same source.

The PCAST paradigm requires that the scientist should make a categorical statement (an identification) that cannot be justified on logical grounds as we have already explained. Most scientists would be comfortable with the notion of observing that two samples *matched* but would, rightly, refuse to take the logically unsupportable step of inferring that this observation amounts to an *identification*.

5.2. Judgement

The report emphasises the value of empirical data (emphasis added):

> The frequency with which a particular pattern or set of features will be observed in different samples, which is an essential element in drawing conclusions, *is not a matter of 'judgment'*. It is an empirical matter *for which only empirical evidence is relevant.* ([1], p. 6)

This denial of the importance of judgement betrays a poor understanding of the nature of forensic science. We offer a simple example.

Mr POI is the suspect for a crime who was arrested at time *T* in location *Z*. Some questioned material has been found on the clothing of Mr POI which is to be compared with reference material taken from the crime scene. Denote the observations on the two samples by y and x respectively. Whichever paradigm we follow, we are interested in the probability of finding material with observations y on the clothing of Mr POI if he had nothing to do with the crime. Ideally, of course, we would like a survey carried out near to time T and in the general region of Z and of people of a socio economic group Q that would include Mr POI. But this is, of course unrealistic. What we do have is a survey of materials on clothing carried out at some earlier time T' and at another location Z' and of a slightly different socio economic group Q'. Who is to make a judgement on the relevance of this survey data to the case at hand? We would argue that this is where the knowledge and understanding of the forensic scientist is of crucial importance.

The reality is, of course, that the perfect database never exists. The council is wrong: it is most certainly *not* the case that "only empirical evidence" is relevant. Without downplaying the impor tance of data collections, they can only inform judgement it is judgement that is paramount and informed judgement is founded in reliable knowledge.

5.3. Subjective versus Objective

PCAST give their definition of the distinction between "objectivity" and "subjectivity" p. 5 footnote 3.

> Feature comparison methods may be classified as either objective or subjective. By objective feature comparison methods, we mean methods consisting of procedures that are each defined with enough standardized and quantifiable detail that they can be performed by either an automated system or human examiners exercising little or no judgment. By subjective methods, we mean methods including key proce dures that involve significant human judgment . . .

What is suggested is that many of the decisions be moved from the examiner to the procedure and/or software. The procedure or software will have been written by one or more people and the decisions about what models are used or how decisions are made are now enshrined in paper or code. Hence all the subjective judgements are now made by this person or group of people via the paper or code. Whereas this approach could be viewed as repeatable and reproducible, the objectivity is illusory.

In the US environment, subjectivity has been associated with bias and sloppy thinking, and objectivity with an absence of bias and rigorous thinking. It is worthwhile examining whence the fear of subjectivity arises. There is considerable proof that humans are susceptible to quite a number of cognitive effects many of which can affect judgement. We suspect that the fear is that these effects bias the decisions in ways that are detrimental to justice. Hence, it is bias arising from cognitive effects that is the enemy, not subjectivity.

If we return to the concept of enforced precision, we could assume that trials could be conducted on such a system and that the outputs could be calibrated. Such a system could be of low susceptibility to bias arising from cognitive effects. We suspect that these are the goals sought by PCAST. We certainly could support calibrating subjective judgements but we see little value in pretending that writing them down or coding them makes them objective.

5.4. Transposed conditional

We are concerned by the report's poor use of the notion of probability. In particular we note in the report many instances where the fallacy of the transposed conditional either occurs explicitly or is implied. We have seen that the logic of forensic inference directs us to assign a value to the probability of the observations given the truth of a proposition. The probability of the truth of a proposition is for the jury *not* the scientist. Confusion between these two different probabilities has been called the "prosecutor's fallacy" [19]. We prefer the term *transposed conditional* because, in our experience, the fallacy is regularly committed by prosecutors, defence attorneys, the judiciary and the media alike.

The fallacy is widespread, even though it can be grounds for a retrial if given in testimony by an expert witness. The document [20] that attempts to explain DNA statistics to defence attorneys in the US describes incorrectly a likelihood ratio for a mixture profile as:

> 4.73 quadrillion times more likely[6] to have originated from [suspect] and [victim/complainant] than from an unknown individual in the U.S. Caucasian population and [victim/ complainant]." ([20], p. 52)

[6] We are fully aware of the distinction made in statistical theory between "likelihood" and "probability". We believe that attempting to explain that distinction in this paper would cause more confusion than the worth of it. It is our experience that in courts of law the two terms are taken to be synonymous.

This is a classic example of the transposed conditional. It is a transposition of the likelihood ratio, which would be more correctly presented as follows:

> The DNA profile is 4.73 quadrillion times more likely to be obtained if the DNA had originated from the suspect and the victim/complainant rather than if it had originated from an unknown individual in the U.S. Caucasian population and the victim/complainant.

The contrast between these two statements, though apparently subtle, is profound. The first is an expression of the probability (or odds) that a particular proposition is true this, we have seen, is the probability that the jury must address, not the scientist.[7] The second considers the probability of the *observations*, given the truth of one proposition then the other, which is the appropriate domain for the expertise of the scientist. It is important to realise that the first statement is not a simple rephrasing of the second statement. Whereas the second may be a valid representation of the scientist's evaluation in a given case, the first most definitely cannot be.

Consider the following quote from the first paragraph on footwear methodology in the PCAST report ([1], p. 114):

> Footwear analysis is a process that typically involves comparing a known object, such as a shoe, to a complete or partial impression found at a crime scene, to assess whether the object is likely to be the source of the impression.

This is wrong. We state again that it is not for the scientist to present a probability for the truth of the proposition that the object was the source of the impression. The scientist addresses the probability of the outcome of the comparison *if* the object were the source of the impression: this probability forms the numerator of the likelihood ratio. Just as important, of course, is the probability of the outcome of the comparison *if* some other object were the source of the impression. The latter forms the denominator of the likelihood ratio. It is the two probabilities, taken together, that determine the evidential weight in relation to the two propositions of interest to the court.

The PCAST report sentence clearly states that the objective of the footwear analysis is to present a probability for the proposition given the observations, and not for the observations given the proposition. This is clearly a transposition of the conditional.

Similarly, the scientist is not in a position to consider the probability addressed in the following ([1], p. 65 and repeated on p. 146):

> . . . determining, based on the similarity between the features in two sets of features, whether the samples should be declared to be likely to come from the same source . . .

We have seen that is not for the scientist to consider the probability that the samples came from the same source given the observation of a "match". It is another example of the fallacy of the transposed conditional.

This confusion is systematic in the original report and we note that it continues into the addendum ([8], p. 1) (emphasis added):

> These methods seek to determine whether a questioned sample *is likely to come* from a known source based on shared features in certain types of evidence.

We have seen that this is most certainly *not* what a feature comparison should aspire to. It is not the role of the forensic scientist to offer a probability for the proposition that a questioned sample came from a given source since this would require the scientist to take account of all of the non scientific information which properly lies within the domain of the jury.

The need for precision of language when presenting probabili ties is exemplified by two quotations from the report. First, from p. 8 when talking about the interpretation of a DNA profile:

> Could a suspect's DNA profile be present within the mixture profile? And, what is the probability that such an observation might occur by chance?

As we read it, this second sentence can be taken to mean:

> What is the probability that such an observation would be made if the suspect's DNA were not present in the mixture?

Within the logical paradigm, this is a legitimate question to ask it is the probability of the observations given that one of the propositions were true.

However, later in the report we find (p. 52):

> the random match probability that is, the probability that the match occurred by chance".

There is an economy of phrasing here that obscures meaning and the reader could be forgiven for believing that the question implied by the second phrase is:

> What is the probability that the two samples had come from different sources and matched by chance?

This is a probability of a proposition (the two samples came from different sources) given the observation (a match) and would imply a transposed conditional. We are aware that the council may respond that this is not at all what they meant to which we would respond that the council should have been far more careful in its phraseology.

5.5. "Probable match"

In giving their definition of the distinction between "objectivi ty" and "subjectivity" p. 5 see footnote 3 the report states:

> how *to determine whether the features are sufficiently similar to be called a probable match.*

The council do not say what they mean by a "probable match" but it seems to us that it is another example of confusion between the match and identification paradigms. Following the match paradigm there is no such thing as a probable match the two samples either match or they do not.

5.6. Foundational validity and accuracy

The report distinguishes two types of scientific validity: "foundational validity" and "validity as applied". We confine ourselves to the first of these (p. 4):

> *Foundational validity* for a forensic science method requires that it be shown based on empirical studies to be *repeatable, reproducible, and accurate*, at levels that have been measured and are appropriate to the intended application. Foundational validity, then, means that a method can, *in principle*, be reliable.

Repeatability refers to the ability of the same operator with the same equipment to obtain the same (or closely similar) results when repeating analysis of the same material. Reproducibility refers to the ability of the equipment to obtain the same (or closely similar) results with different operators. As such, both are

[7] In Bayesian terms, the first statement is one of posterior odds. This can be derived from the second statement either by assigning prior odds of one (which would be highly prejudicial in most criminal trials) or by making the mistake of transposing the conditional. Neither is acceptable behaviour for a scientist.

expressions of precision, which is how close each measurement or result is to the others.

Accuracy is a measure of how close one or a set of measurements is to the true answer. This has an obvious meaning when we know or could know the true answer. We could imagine some measurement such as the weight of an object where that object has been weighed by some very advanced technique and we can accept that as the "true" weight. We wish then to consider the accuracy of some other, perhaps cheaper, technique. We could assess the accuracy of this second technique by using it to weigh the object multiple times and observing the deviation of the results from the "true" weight of the object.

For some questions in forensic science, such as "How much heroin is in this seized sample?" or "How much ethanol is in this blood sample?", the notion of the accuracy of an applied analytical technique is relevant because it is possible to assess a technique's accuracy using trials with known quantities of heroin or ethanol. However, when it comes to answering a question such as "What is the probability that there would have been a match with a suspect's shoe if it did not make the mark at the scene of crime?", then there is no sense in which there is a "true answer". The values that experts assign for such probabilities will vary depending on the specific knowledge of the experts and the nature of any databases that experts may use to inform their probabilities.

We could use a weather forecaster as an illustration. If she says that there is a 0.8 probability of a sunny day tomorrow, there can be no sense in which this is a "true" statement. Equally, if tomorrow brings rain, she is not "wrong" in any sense. Nor is she "inaccurate". A probabilistic statement of this nature may be unhelpful or misleading, in the sense that it may lead us to make a poor decision, but it cannot be either true or false.

Once we abandon the idea of a true answer for probabilities, we are left with the difficult question of what we mean by accuracy. We suggest that the report does a disservice to the important task of calibrating probabilities by a simplistic allusion to accuracy.

The PCAST report says (p. 46):

> Without appropriate estimates of accuracy, an examiner's statement that two samples are similar or even indistinguishable is scientifically meaningless; it has no probative value, and considerable potential for prejudicial impact. Nothing not training, personal experience nor professional practices can substitute for adequate empirical demonstration of accuracy.

We have seen that the report is wrong here it is not a matter of "accuracy" but of evidential weight.

5.7. The PCAST paradigm

The PCAST report proposes an approach that is fusion of the match and identification paradigms. See, from p. 45/46:

> Because the term "match" is likely to imply an inappropriately high probative value, a more neutral term should be used for an examiner's belief that two samples came from the same source. We suggest the term "proposed identification" to appropriately convey the examiner's conclusion, along with the possibility that it might be wrong. We will use this term throughout the report.

First, we have seen that the term "match", if used properly, makes no implication of probative value: it implies that the two samples might have come from the same source but also might have come from different sources. This is evidentially neutral. Second, we have seen that there is no place for the "examiner's belief that two samples came from the same source": it is not for the scientist to assign a probability to the proposition that the two samples came from the same source.

Next we must consider what the council understand the phrase "proposed identification" to mean. Do they mean that, because it is an identification, it is a categorical opinion? Note that the qualifier "proposed" does not make the identification less than categorical – if it were probabilistic it could not be "wrong".[8] If it is not probabilistic then the scientist is to provide a categorical opinion while telling the court that he/she might be wrong! It is difficult to believe that any professional forensic scientist would be happy to be put in this position.

5.8. The scientist as a "black box"

On page 49 we find:

> For subjective methods, procedures must still be carefully defined but they involve substantial human judgment. For example, different examiners may recognize or focus on different features, may attach different importance to the same features, and may have different criteria for declaring proposed identifications. Because the procedures for feature identification, the matching rule, and frequency determinations about features are not objectively specified, the overall procedure must be treated as a kind of "black box" inside the examiner's head.

The report justifiably emphasises weaknesses of qualitative opinions. The intuitive "black box" view of the scientist will certainly have been true in many instances in the past and, indeed, in certain quarters in the present day. But for us the solution is emphatically not to continue to treat this as an acceptable state of affairs for the future. The PCAST view appears to be "it's a black box, so let's treat it like a black box". Our approach has been, and will continue, to break down intuitive mental barriers by expanding transparency, knowledge and understanding. We do not see the future forensic scientist as an *ipse dixit* machine whatever the opinion, we expect the scientist to be able to explain it in whatever detail is necessary for the jury to comprehend the mental processes that led to it.

5.9. Black box studies

That the council intend the proposed identification to be categorical is clarified in the following from page 49 (emphasis added):

> In black box studies, many examiners are presented with many independent comparison problems typically, involving "questioned" samples and one or more "known" samples and *asked to declare whether the questioned samples came from the same source as one of the known samples*.[9] The researchers then determine how often examiners reach erroneous conclusions.

PCAST proposes that the error rates from such experiments would be used to assign evidential value at court.

We are strongly against the notion that the scientist should be forced into the position of giving categorical opinions in this way. Whereas, we are strongly in favour of the notion of calibrating the

[8] Though, of course, it would be logically incorrect because it would imply a transposed conditional.

[9] In footnote 111 the report says: "Answers may be expressed in such terms as "match/no match/inconclusive" or "identification/exclusion/inconclusive". This strengthens our belief that the council see match and identification as interchangeable".

opinions of forensic scientists under controlled conditions we see those opinions expressed in terms of statements of evidential weight. We return to the subject of calibration later.

5.10. Governance

PCAST suggests that forensic science should be governed by those, such as metrologists, from outside the profession. This speaks to the view, reinforced by a very selective reference list, that the forensic science discipline is not to be trusted with developing procedures, testing them, and self governance. We do not reject input from outside the profession: we welcome it. But our own observations are that those outside may be engaged to different extents, varying from a passing interest to years of study. They may be unduly influenced by headlines in newspapers highlighting or exaggerating deficiencies. On occasion, these same commentators from outside the profession may not recognise the limitations in their own knowledge base where it concerns specifically forensic aspects, may be reticent to consult subject matter experts from amongst practising scientists and may give well intentioned, but erroneous, advice [1,21].

6. Our view of the future

6.1. Logical inference

The recommendations of the PCAST report are founded on a conflation of two classical forensic paradigms: match and identification. These paradigms are as old as forensic science but their inadequacies and illogicalities have been comprehensively exposed over the last 50 years or so. All of us maintain, and have done so in our writings, that the future of forensic science should be founded first on the notion of logical inference and second on the notion of calibrated knowledge. The former leads to a framework of principles (which have been adopted by ENFSI) and we are disappointed that PCAST has apparently chosen to ignore, or at most pay lip service to, this fundamental change. The second is a deeper and far richer concept than the profoundly limited notion of false positive and false negative error rates: this is the notion of *calibration.*

6.2. Calibration

We are most definitely in favour of the studying of expert opinion under controlled circumstances, see for example Evett [22] but proficiency testing is far more than the counting of errors. The PCAST black box approach calls for a categorical opinion that is recorded as right or wrong but we have seen that forensic interpretation is far richer and more informative than simple yes/no answers. In a source level proficiency test we expect the participants to respond with a statement of evidential weight in relation to one of two clearly stated propositions. Support thus expressed for a proposition that is, in fact, false is undesirable because it is misleading not "wrong". Obviously, the desirable outcome of the proficiency test is a small value for the expected weight of evidence in relation to a false proposition. But whatever the outcome, the study must be seen as a learning exercise for all participants: the pool of knowledge has grown. The notion of an error rate to be presented to courts is misconceived because it fails to recognise that the science moves on as a result of proficiency tests. The work led by Found and Rogers [23] has shown how the profession of handwriting comparison in Australia and New Zealand has grown in stature because of the culture of advancing knowledge through repeated study under controlled conditions. To repeat then, our vision is not of the black box/error rate but of continuous development through calibration and feedback of opinions.

A striking example of forensic calibration is the evolution of fingerprints evidence from the identification paradigm to the logical paradigm via mathematical modelling [24,25]. Instead of the categorical identification, we have a mathematical approach that leads to a likelihood ratio. The validation of such approaches is founded on two desiderata: we require large likelihood ratios in cases in which the prosecution proposition is true; and small likelihood ratios in cases in which the defence proposition is true. Investigation of performance in relation to these two desiderata is undertaken by considering two sets of comparisons: one set in which it is known that the two samples came from the same source; and one set in which it is known that the two samples came from different sources. There have been major advances over recent years in how the likelihood ratio distributions from such experiments may be compared and evaluated (Ramos [26], Brümmer [27] see also Robertson et al. [28] for a layman's introduction to calibration). The elegance and performance of such methods far transcends the crude PCAST notion of "false positive" and "false negative" error rates.

6.3. Knowledge and data

The PCAST report focuses on "feature comparison" methods and, as we have explained, this has meant that it is concerned with inference relating to source level propositions. At this level, the report sees data as the sole means for assigning probabilities. An important part of the role of the forensic scientist is concerned with inference with regard to activity level propositions. Consider, for example, a question of the form "what is the probability of finding this number of fragments of glass on Mr POI's jacket if he is the person who smashed the window at the crime scene?" The answer is heavily dependent on circumstantial information (how large is the window? where was the person who smashed the window standing? was any implement used? how much time elapsed between the breaking of the window and the seizure of the jacket from Mr POI? etc.) and the variation in this between cases is vast. There is no single database to inform such probabilities. The scientist will, it is hoped, be thoroughly familiar with all of the published literature on glass transfer in crime cases [29] and may, if resources permit, carry out experiments that reproduce the current case circumstances. The knowledge and judgement of other scientists who have encountered similar questions is also relevant. We agree with PCAST that length of experience is not a measure of reliability of scientific opinion: the foundation is reliable knowledge. Too little effort has been devoted within the forensic sphere thus far to the harnessing of knowledge through knowledge based systems but see [29] for examples of how such a system was created for glass evidence interpretation.

We do not deny the importance of data collections but the view that data may replace judgement is misconceived. A data collection should be used to inform reliable knowledge not replace it.

We have explained that our view of the scientist is the antithesis of the PCAST "black box" automaton. Although there is a need for data, PCAST are mistaken in seeing it as the be all and end all: qualitative judgement will always be at the centre of forensic science evidence evaluation. We reject the PCAST vision of the scientist who gives a categorical opinion and a statement about the probability that the opinion is wrong. We see the model scientist as deeply knowledgeable about her domain of expertise and able to rationalise the opinion in terms that the jury will understand. The principles have been expressed elsewhere [11] as balance, logic, robustness and transparency. There is no place for the black box. We agree that the scientist should be able to provide the court with evidence of performance under controlled conditions. Found and Rogers [23] have provided a model for handwriting comparison

and we see such approaches as extending into other areas: the emphasis is on calibration of probabilistic assessments.

7. Conclusion

The 44th US president's request was "to consider whether there are additional steps that could usefully be taken on the scientific side to strengthen the forensic science disciplines and ensure the validity of forensic evidence used in the Nation's legal system" ([1], p. 1). We suggest that the report has very little emphasis on positive steps and does much to reinforce poor thinking and terminology.

Our own view of the future of forensic science is based on the principle that forensic inference should be founded on a logical framework for reasoning in the face of uncertainty. That framework is provided by probability theory coupled with the recognition that probability is necessarily subjective and condi tioned by knowledge and judgement. It follows that our view of the forensic scientist is a knowledgeable, logical and reasonable person. Whereas data collections are valuable they should be viewed within the context of reliable knowledge. The overarching paradigm of reliable knowledge should be founded on the notion of knowledge management, including comprehensive systems for the calibration of expert opinion.

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To whom it may concern:

When the President's Council of Advisors on Science and Technology (PCAST) Report first was published in 2016, it was obvious that the report was not particularly helpful from a scientific perspective as it was myopic, full of error, and did not provide data to support its contentions. A more significant concern regarding the failings of the PCAST Report was that it claimed its focus was on science, but obviously was dedicated substantially to policy. Initially I considered writing a critique about the failings of the PCAST Report to assist the community. But the problems with this report were so obvious that I did not think it would be necessary to devote time to such an effort. Indeed my prediction was correct in that the report would be (and has been) rejected by the scientific community as well as overwhelmingly by the courts. However, the PCAST Report is being relied on by the Public Defender Service in U.S. v. Benito Valdez (Motion to Exclude the Testimony of the Government's proposed expert witness in Firearms Examination and Memorandum of Points and Authorities in Support, dated June 2, 2017) as a scientifically sound review of the state of the forensic sciences. Therefore, it has become necessary to address the serious limitations of the PCAST Report and convey that it is an unsound, unsubstantiated, non-peer-reviewed document that should not be relied upon for supporting or refuting the state of the forensic sciences.

My credentials to be able to opine on the failings of the PCAST Report are based on my work of more than 30 years in research, development, validation, and implementation of DNA typing methodologies for forensic applications (my CV is attached). I received a Ph.D. in Genetics in 1979 from Virginia Polytechnic Institute and State University. From 1979-1982, I was a postdoctoral fellow at the University of Alabama at Birmingham and carried out research predominately on genetic risk factors for such diseases as insulin dependent diabetes mellitus, melanoma, and acute lymphocytic leukemia. In 1983, I joined the research unit at the FBI Laboratory Division to carry out research, development, and validation of methods for forensic biological analyses. The positions I held at the FBI include: research chemist, program manager for DNA research, Chief of the Forensic Science Research Unit, and the Senior Scientist for the Laboratory Division of the FBI. I have contributed to the fundamental sciences as they apply to forensics in analytical development, population genetics, statistical interpretation of evidence, and in quality assurance. Some of my technical efforts have been: 1) development of analytical assays for typing myriad protein genetic marker systems, 2) designing electrophoretic instrumentation, 3) developing molecular biology analytical systems to include RFLP typing of VNTR loci and PCR-based SNP, VNTR and STR assays, and direct sequencing methods for mitochondrial DNA, 4) new technologies such as use of massively parallel sequencing; and 5) designing image analysis systems. I worked on laying some of the foundations for the current

statistical analyses in forensic biology and defining the parameters of relevant population groups. I have published approximately 600 articles (more than any other scientist in the area of forensic genetics), made more than 730 presentations (many of which were as an invited speaker at national and international meetings), and testified in well over 250 criminal cases in the areas of molecular biology, population genetics, statistics, quality assurance, validation, and forensic biology. In addition, I have authored or co-authored books on molecular biology techniques, electrophoresis, protein detection, forensic genetics, and microbial forensics. I was directly involved in developing the quality assurance standards for the forensic DNA field in the United States. I have been a chair and member of the Scientific Working Group on DNA Methods, Chair of the DNA Commission of the International Society of Forensic Genetics, and a member of the DNA Advisory Board. I was one of the original architects of the CODIS National DNA database, which maintains DNA profiles from convicted felons, from evidence in unsolved cases, and from missing persons.

Some of my efforts over the last 16 years also are in counter terrorism, including identification of victims from mass disasters, microbial forensics and bioterrorism. I was an advisor to New York State in the effort to identify the victims from the WTC attack. In the area of microbial forensics, I was the chair of the Scientific Working Group on Microbial Genetics and Forensics, whose mission was to set QA guidelines, develop criteria for biologic and user databases, set criteria for a National Repository, and develop forensic genomic applications. I also have served on the Steering Committee for the Colloquium on Microbial Forensics sponsored by American Society of Microbiology, was an organizer of four Microbial Forensics Meetings held at The Banbury Center in the Cold Spring Harbor Laboratory, and participated on several steering committees for NAS sponsored meetings.

In 2009 I became Executive Director of the Institute of Applied Genetics and Professor at the University of North Texas Health Science Center at Fort Worth, Texas. I currently direct the Center for Human Identification. I also direct an active research program in the areas of human forensic identification, microbial forensics, emerging infectious disease, human microbiome, molecular biology technologies, and pharmacogenetics (or molecular autopsy). I also currently am an appointed member of the Texas Forensic Science Commission.

Of note, the PCAST Committee relied on my work and as a noted expert which is supported by the report's citation of my work several times all in a favorable manner. Indeed, I am the scientist at the FBI that is mentioned as Dr. Lander's co-author to bolster his credentials in the forensic sciences (see footnotes 17 and 20). My work is cited in footnotes 33, 149, 183, 185, 187, and 209.

The report lacks scientific substance. It is cloaked with a veneer of science but in actuality is an attempt to set policy. The report discusses and advocates validation (a topic all should agree is important). Yet the topic is only addressed superficially providing definitions that already are well known with generalizations and terms it calls criteria. Nothing novel was provided by the report (see examples in references 1-7 that already have discussed the same criteria but to a greater degree than in the report). Moreover, the report does not provide any substantial guidance on how to perform validation studies for any of the disciplines it addresses. There are basic validation criteria such as sample size, power analyses, types of samples, sensitivity, specificity, dynamic range, purity of analyte, etc. that the report does not address per se or only touches upon (and instead uses black box studies for its only endeavor into sampling uncertainty and for a

misguided attempt at addressing the potential for error). The PCAST Committee could have done a service to the community if it had selected some validation studies that it claims to have reviewed (although such claims are suspect as there is no documentation supporting the claims) and described specifically those studies that the PCAST Committee deemed inappropriate and/or inadequate. Then, the PCAST Committee could have laid out how those studies should have been performed with the real substantive criteria and examples that are necessary to perform a validation study. Leading by example would have been helpful; instead the report just dismisses most of the work performed in 2000 plus articles that it claims (sic) to have reviewed. The report criticizes the forensic community for a lack of validation studies but does not describe what is lacking in any substantive way.

The Report does not describe data from each of the disciplines that could be relied upon. It is difficult to believe that in 2000 papers, the PCAST Committee claims to have relied upon, that there are no data of value. There are no indications that the PCAST Committee actually assessed the data in the literature. There is little if any documentation in this regard which should be extremely troubling to all given the PCAST Committee's strong positions of the importance of validation, documentation, and peer-reviewed publication for the forensic science community. The PCAST Committee clearly takes a "do as I say, not as I do" position. The report contains no discussion on the criteria that were used to assess the literature, the criteria that were used to dismiss the literature as inadequate, and no documentation that any data (if existing) are readily available to support that the PCAST committee performed a sound, full and complete review. Again, these issues are most disconcerting because it is apparent that the PCAST Committee in its undertaking did not hold itself up to the same standards of validation, documentation, and peer-review that it espouses the forensic community should embrace (compounded as a number of the criticisms in the report are unfounded). The report provides some guidance on basic statistics, such as estimating false positive rates (which are not novel). However, this lecturing on proper statistics is troubling to say the least as the report misuses statistics in its own cursory efforts.

The following are examples from the report to support my above claims. They are not comprehensive as it is unnecessary to go page-by-page to indicate the serious problems with the PCAST Report. A few examples should suffice to demonstrate why this report has been so underwhelming and been ignored by most scientists and the courts. In pointing out the failings of the report I will focus on topics that transcend the disciplines and specifically on my area of expertise, i.e., DNA; I could not adequately address the other disciplines and what data do or do not exist in those forensic science areas. I leave specifics of other disciplines to those with requisite expertise. However, I stress that since the report misinforms on forensic DNA applications, which is considered the "gold standard" and well-documented in the scientific literature (even the report acknowledges that), then there is a strong indication that perhaps the report missed the mark on the other disciplines as well.

I take the position that improvements in forensic sciences are needed. Indeed, all science continues to improve. It is never static. In my field of DNA typing, I and others have been and currently are working on developing better/improved methods, such as the use of next generation sequencing and new software tools. It would be improper to say that any method is perfect and cannot be made better. That position, though, is not a wholesale condemnation of the forensic sciences. Each discipline, or better yet each application, should be assessed in context as a holistic system (not solely based on validation as the report seemingly myopically espouses) and

the types/quality of samples encountered in specific cases. The report's generalization of issues avoids addressing an extremely important question – was the analysis/interpretation in this case performed correctly?

The first two examples presented below are particularly egregious and point to the dearth of substance in the report. The report states on page 2

> "In the course of its study, PCAST compiled and reviewed a set of more than 2,000 papers from various sources—including bibliographies prepared by the Subcommittee on Forensic Science of the National Science and Technology Council and the relevant Working Groups organized by the National Institute of Standards and Technology (NIST); submissions in response to PCAST's request for information from the forensic-science stakeholder community; and PCAST's own literature searches."

On page 67 of the report it is stated

> "PCAST compiled a list of 2019 papers from various sources—including bibliographies prepared by the National Science and Technology Council's Subcommittee on Forensic Science, the relevant Scientific Working Groups (predecessors to the current OSAC), and the relevant OSAC committees; submissions in response to PCAST's request for information from the forensic-science stakeholder community; and our own literature searches."

There were two citations to support the review of the 2000 or so papers that the PCAST relied upon:

> www.nist.gov/forensics/workgroups.cfm.
>
> www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensics_references.pdf.

Neither of these sites appear to show (or allow for ready identification) what those articles were that the PCAST Committee reviewed and then relied upon. More so, there are no criteria and no data in the report or at these sites on what the PCAST Committee actually read, noted, reviewed, quantified, calculated, accepted, rejected, and/or debated. The report advocates emphatically and repeatedly the virtues of validation, documentation, and peer-review. Yet the report does not contain such information and thus does not meet as a minimum the requirements that it lambasted the forensic science community for lacking. This inconsistency between recommended requirements and lack of performance by the PCAST Committee is most noted as there is substantial documentation in the forensic science community (in many disciplines) but not in this report.

This lack of documentation should be considered in light of the report's statements on pages 1 and 22

> "PCAST concluded that there are two important gaps: (1) the need for clarity about the scientific standards for the validity and reliability of forensic methods and (2) the need to

> evaluate specific forensic methods to determine whether they have been scientifically established to be valid and reliable."

The report also states on pages 4 and 21

> "It is the proper province of the scientific community to provide guidance concerning scientific standards for scientific validity, and it is on those *scientific* standards that PCAST focuses here."
> Yet the PCAST Committee did not provide its data to support the validity of its own work. There simply is no accounting of the PCAST Committee's work to demonstrate it assessed the 2000 papers and how it came to the conclusions it rendered.

This evident failing is exacerbated by the reports statement on page 6

> "The forensic examiner must have been shown to be *capable* of reliably applying the method and must *actually* have done so. Demonstrating that an expert is *capable* of reliably applying the method is crucial—especially for subjective methods, in which human judgment plays a central role. From a scientific standpoint, the ability to apply a method reliably can be demonstrated only through empirical testing that measures how often the expert reaches the correct answer. Determining whether an examiner has *actually* reliably applied the method requires that the procedures actually used in the case, the results obtained, and the laboratory notes be made available for scientific review by others."

No one knows what method(s) the PCAST Committee used; but it is clear that it did not hold itself to the same standard either by *capability* or *actually* performing. This report cannot be held up for scientific review (as indicated on page 6 of the report – see immediately above). There are no notes or results available.

As the report says repeatedly (see pages 6 and 32)

> "We note, finally, that neither experience, nor judgment, nor good professional practices (such as certification programs and accreditation programs, standardized protocols, proficiency testing, and codes of ethics) can substitute for actual evidence of foundational validity and reliability."

The academic and professional standings of the PCAST Committee members are not a substitute for good practices (none of which are documented). No one should take seriously this report because it has little substance to support its contentions.

The second most egregious example is the misuse and disregard for statistics. It may appear to the casual observer that the PCAST Committee is steeped in statistics and thus all statistics presented must be meaningful. For example, the report dedicates Appendix A for some discussion on statistics. But this guidance is rather basic and not particularly helpful to guide the community for any specific discipline or application. Yet when it comes to substance the PCAST Committee fails again which is evident in its own use of statistics. Consider the statements in the report on page 3

> "Reviews by the National Institute of Justice and others have found that DNA testing during the course of investigations has cleared tens of thousands of suspects and that DNA-based re-examination of past cases has led so far to the exonerations of 342 defendants. Independent reviews of these cases have revealed that many relied in part on faulty expert testimony from forensic scientists who had told juries incorrectly that similar features in a pair of samples taken from a suspect and from a crime scene (hair, bullets, bitemarks, tire or shoe treads, or other items) implicated defendants in a crime with a high degree of certainty."

Then on page 26

> "DNA-based re-examination of past cases, moreover, has led so far to the exonerations of 342 defendants, including 20 who had been sentenced to death, and to the identification of 147 real perpetrators."

A similar statement is found on page 44 (footnote 94). These findings appear to support the assertion on page 44 of the report

> "It is *important* because it has become apparent, over the past decade, that faulty forensic feature comparison has led to numerous miscarriages of justice."

I do not dispute that there have been 342 post-conviction exonerations. I am not sure what the number of exonerations is when the report says "many relied in part on faulty expert testimony" – because the report does not quantify what is meant by many. However, one wrongful analysis or testimony is one too many, and every effort should be made to minimize forensic science errors. The exoneration of 342 convicted felons is serious and topic in its own right (and again way too many). But this number is statistically meaningless and out of context. The PCAST Committee should have recognized this obvious aspect of the use of numbers. The PCAST Committee did not perform any statistical analyses or even appear to collect the data necessary to put these numbers in proper perspective. The PCAST Committee should have identified how many cases in total that have been reviewed to date (especially given that the report discusses the proper way to calculate a false positive rate, the Committee does not follow through with the same verve). This number of 342 may be and is likely a very small percentage of the total number of cases reviewed, especially since the innocence project has been around for 25 years (see https://25years.innocenceproject.org/). Moreover, the PCAST Committee did not convey how many post-conviction analyses that have been performed over the past 25 years in which there was no evidence of improper scientific performance, findings or faulty testimony. It would seem that such obvious basic information eluded the PCAST Committee. Those cases that were reviewed over the past 25 years in which no misuse of forensic science analyses were detected would indicate that perhaps the forensic science field is not so scientifically corrupt as the report implies. More so it would indicate that proper results can be obtained (at least most of the time).

The report discusses error rates substantially using statements such as on page 6

> "Similarly, an expert's expression of *confidence* based on personal professional experience or expressions of *consensus* among practitioners about the accuracy of their field is no substitute for error rates estimated from relevant studies."

The PCAST Report also recommends

> "For subjective feature-comparison methods, because the individual steps are not objectively specified, the method must be evaluated as if it were a "black box."

Smrz et al (8) (a paper of which I am a co-author) recommended the black box approach after the review of the FBI Laboratory's latent print misidentification related to the Madrid bombing incident, and the PCAST Report advocates the use of such black box studies. I concur that a black box approach has some value but strongly caution that one must consider the proper utility of such studies. The authors of the PCAST Report calculated upper bound error rates based on the results of the very few black box studies they discuss; the PCAST Committee seemingly implies that these upper bound error rates are somehow meaningful to report in every case analysis. A black box study can demonstrate generally whether or not a method can yield reliable results where a human is substantially involved in the interpretation of results. But it does not necessarily help address error that may or may not have occurred during a specific case analysis.

There are several problems with such a simplistic generalization that the authors of the PCAST Report have taken regarding use of black box studies. A black box study only tests those individuals involved in the study. Therefore, the performance of the rest of the analysts of the forensic science community is not covered by the study, and the results of the study may not apply to those analysts. Some individuals perform better than others in black box studies. The average rate inflates the performance of the poorer analysts and deflates the performance of the better analysts tested in the study. Therefore, the error rate values calculated by the PCAST authors likely do not apply to most analysts. Moreover, the information content and quality of results from a forensic science analysis vary from sample to sample. Treating all sample results equally and applying a single error rate does not convey the chance for error in a particular analysis. As the PCAST Report states (see below) DNA mixture interpretation is more challenging than interpretation of single source DNA profiles. If the PCAST Committee recognizes that differences in the quality of DNA evidence affect difficulty of interpretation, then the PCAST Committee should have been able to realize that the same holds for black box study results and different quality evidence (another obvious inconsistency in the report).

A known error rate or proficiency test mistake is at best some indirect measure of the verity of the proposed results in any given sample analysis, but can never be a direct measure of the reliability of the specific result(s) in question (9). Consider a hypothetical crossing of a street where there is a 1% error (arbitrary for sake of discussion) of being hit by a car. At the beginning of the journey crossing the road there is a 1% error of being hit. While crossing the road the chance can increase or decrease depending on circumstances (possibly being greater at the center of the road and less within lanes). If the individual successfully crosses the road, then the error drops to zero. Of course, different roads (such as a busy interstate vs a rural back road) have different *a priori* chances of error (i.e., similar to the quality of evidence affects the degree of difficulty). Ultimately the issue of crossing the road is did the individual successfully cross the road or get hit. The same holds for casework, i.e., is there an error or is there not an error in the performance or analysis. Given that the black box studies mentioned in the report did have a good degree of success, there is support that a process can generate a reliable result. Thus it still comes back to determining if an error of consequence was committed in a specific case. Oddly not mentioned in the PCAST Report is that most of the forensic disciplines addressed carry out non-consumptive forms of examination. Therefore, the most direct way to measure the truth of

the purported results is to have another expert conduct his/her own review, as is advocated by the National Research Council Report II for DNA analyses (10). Re-analysis would be more meaningful instead of espousing hypothetical error rates, which may not apply to the actual results and/or analysts involved. Indeed, the above mentioned black box studies and the missing data on total number of cases from innocence project case reviews do support that tests can yield reliable results but that most of the problems (as discussed below for DNA mixtures) have been due to misapplication. Therefore, case peer-review can be an effective approach to identify misapplications. However, the PCAST Report seems to ignore the value of this practice which demonstrates the reports myopic assessment of the forensic sciences and lack of consideration of a holistic systems approach.

The PCAST Report singles out validation as essentially the sole basis for reliability. Instead under a systems approach there are several components that impact an outcome, and the reliance on these several features increases validity and reliability in any one case. Quality performance is an essential component for obtaining reliable results and for reducing the chance of error. Quality assurance provides an infrastructure to promote high performance, address errors that arise, and improve processes. In addition to validation studies, there are other mechanisms such as technical review of a case that reduce error. This technical review is performed within the laboratory before issuing a report and also outside the laboratory when an expert witness is acquired by the opposing side to assess results and interpretations. The PCAST Report seems to ignore the value of these additional quality measures and the strength of the adversary system.
Error rates are difficult to calculate; they are fluid. When an error of consequence (i.e., a false "match") occurs, under a sound quality assurance program corrective action is taken (to include review of cases analyzed by the examiner prior to and post the discovery of the error). When the corrective action is such that the individual will no longer commit that error, it no longer impacts negatively on the individual's future performance. In fact, he/she is better educated and less likely to err. The calculation of a current error rate then should not include past error(s). Having said that, past error should not be ignored; if desired, it could be raised in court or other deliberations. The defense (or prosecution), if it believes it useful, should make use of such information during a cross-examination of an expert. But the PCAST Report does not address the shortcomings of the calculated error rate as it uses it; it treats the upper bound error rate calculation from black box studies as if they are robust and specific (which they are not).

Notably the PCAST Report tends to dismiss experience and judgment, implying it has little value. I agree that experience and judgment standing alone should be considered with caution. However, the vast majority of forensic science disciplines work in a systems approach, i.e., many facets to the process; experience is but one factor among several to effect a quality result. Even though the PCAST Report dismisses experience it again shows its inconsistencies about the province of experience. Consider the following statements on page 55 of the report

> "In some settings, an expert may be scientifically capable of rendering judgments based primarily on his or her "experience" and "judgment." Based on experience, a surgeon might be scientifically qualified to offer a judgment about whether another doctor acted appropriately in the operating theater or a psychiatrist might be scientifically qualified to offer a judgment about whether a defendant is mentally competent to assist in his or her defense."

> "By contrast, "experience" or "judgment" cannot be used to establish the scientific validity and reliability of a metrological method, such as a forensic feature-comparison method. The frequency with which a particular pattern or set of features will be observed in different samples, which is an essential element in drawing conclusions, is not a matter of "judgment." It is an empirical matter for which only empirical evidence is relevant. Moreover, a forensic examiner's "experience" from extensive casework is not informative—because the "right answers" are not typically known in casework and thus examiners cannot accurately know how often they erroneously declare matches and cannot readily hone their accuracy by learning from their mistakes in the course of casework."

Even to a lay person these statements should be obviously inconsistent, troubling and point to the inadequacy of the PCAST Committee addressing the topic of forensic science reliability. I fail to see why the medical and psychology fields can have another expert review another's work (on what may be life and death decisions) and opine on the analyses/interpretations; yet a qualified forensic science analyst cannot perform a technical review of forensic work to assess analyses/interpretations (especially since the report has ignored data that support that at some level forensic testing is reliable). The logic of the PCAST Committee escapes me.

The PCAST Report discusses DNA typing and the limitations that have been encountered with mixture interpretation. For example on page 75 the report states

> "DNA analysis of complex mixtures—defined as mixtures with more than two contributors—is inherently difficult and even more for small amounts of DNA."

I concur that it is more challenging to interpret DNA mixtures compared with single-source DNA profiles. But the report fails to add that difficult does not necessarily translate into impossible or that proper interpretations can be made. The difficulties with mixture interpretation were not due to a lack of good, valid approaches to employ as there were valid approaches and also not due to the fact that there is some subjective judgment with interpretations. The issue, and it is a serious one, was that many of the practitioners in the forensic DNA community were inadequately trained, did not seek out solutions, or instead chose to wait for guidance (see pages 77-78 of the PCAST report and discussion on Texas and mixture interpretation). These issues were similar to the mixture interpretation problems at the Department of Forensic Sciences in Washington, DC (in which I was the scientist who identified the problems).

The PCAST Report assails the use of the Combined Probability of Inclusion (CPI) which is one of the methods used by the community and endorsed by the DNA Advisory Board (11) 17 years ago. However, the discussion of the Texas Forensic Science Commission (TFSC) (of which I was deeply involved in the review of mixture interpretation for the State) and how it pursued and addressed inappropriate interpretation of mixtures actually implies that valid methods do exist; otherwise how could a group of international experts (of which I was one of the experts) assess the situation, determine that there are problems in the application of interpretation guidelines, and provide guidance to the community to implement sound procedures?

The PCAST Committee on page 78 of the report states

> "The TFSC also convened an international panel of scientific experts—from the Harvard Medical School, the University of North Texas Health Science Center, New Zealand's

> forensic research unit, and NIST—to clarify the proper use of CPI. These scientists presented observations at a public meeting, where many attorneys learned for the first time the extent to which DNA-mixture analysis involved subjective interpretation. Many of the problems with the CPI statistic arose because existing guidelines did not clearly, adequately, or correctly specify the proper use or limitations of the approach."

The report properly focuses on lack of detailed guidelines on interpretation and does not suggest that the principles of how to calculate the CPI are erroneous. Indeed, nowhere in the report are there any data to indicate that the CPI is foundationally erroneous.

Yet, the report then states on page 78

> "In summary, the interpretation of complex DNA mixtures with the CPI statistic has been an inadequately specified—and thus inappropriately subjective—method. As such, the method is clearly not foundationally valid."

The allegation that the CPI is not foundationally valid demonstrates the lack of understanding (and again the lack of documentation of review) by the PCAST Committee. In fact, these statements also demonstrate another report inconsistency – this time about the principles of statistical calculations related to DNA profiles. On page 72 the report states

> "The process for calculating the random match probability (that is, the probability of a match occurring by chance) is based on well-established principles of population genetics and statistics."

The random match probability is one approach to calculating a statistic for single-source samples and appears to be endorsed by the PCAST Committee as well-established and thus valid. Yet, the PCAST Committee takes the opposite position for the CPI stating it is not foundationally valid. If one reads my colleagues and my most recent paper on the CPI (12), cited in the PCAST Report, it is clear that the principles of the foundational validity of the CPI are the same as those for the random match probability. Consider a similar situation which is the chance of drawing four aces in a row from a standard deck of cards is estimated to be 1 in 270,275. This value is based on probability theory and does not require an empirical testing to be published in the peer reviewed literature to support it validity. The CPI and random match probability use the same population frequency data and the same well-established principles of population genetics and statistics. While this is another example of myopia by the PCAST Committee, it borders on the bizarre that the PCAST Committee failed to understand the foundations of DNA statistics.

All know the PCAST Committee had access to the most recent paper on the use of the CPI (and the references within that paper) as it is stated on page 78 of the report

> "Because the paper appeared just as this report was being finalized, PCAST has not had adequate time to assess whether the rules are also *sufficient* to define an objective and scientifically valid method for the application of CPI."

I note that the CPI is a rather simple concept and its foundations are basic. It is surprising that the PCAST Committee, which touts its vast expertise, could not readily assess the paper. Given the importance of their report and this topic it also is surprising that they would not have done so before finalizing their report.

The PCAST Report recognizes that probabilistic genotyping is an advancement to improve or reduce subjectivity in DNA mixtures (see page 79). I concur. But the report states on page 79

> "Appropriate evaluation of the proposed methods should consist of studies by multiple groups, *not associated with the software developers*, that investigate the performance and define the limitations of programs by testing them on a wide range of mixtures with different properties."

Also the report states on page 81

> "Because empirical evidence is essential for establishing the foundational validity of a method, PCAST urges forensic scientists to submit and leading scientific journals to publish high-quality validation studies that properly establish the range of reliability of methods for the analysis of complex DNA mixtures."

Publication is part of the peer-review process and I support publication by the developers and others who adopt the method. But the PCAST Committee has placed a requirement that is unrealistic to meet which is publication by the user laboratories. It is likely that a few at most laboratories will be able to publish their validation testing of the software. Anyone who serves on editorial boards of scientific journals should know that journals are unlikely to publish additional studies because they are not considered novel. Yet, the PCAST Committee failed to recognize this fact.

It is important to stress that the report contains no criticisms of probabilistic genotyping and still there are no data contained in the report that demonstrate that the PCAST Committee actually reviewed (or better yet tested) the current probabilistic genotyping software programs (even though it claims to have done extensive review, such as the undocumented 2000 papers).

Forensic laboratories are required to perform validation studies, and there are substantial data on mixtures that support the validity of mixture interpretation and use of probabilistic genotyping. Mixture studies are required to be performed by every laboratory engaged in analyzing such evidence as part of their validation studies. Many of these studies lack novelty and thus will never be published in peer-review journals. However, the PCAST Committee could have contacted a number of forensic DNA laboratories who have implemented one of the probabilistic genotyping software programs (as there were laboratories operating or near implementation of the tools at the time of the report's publication) to gain access to the validation data to determine whether there are sufficient data to support the already peer-reviewed published work. There is no indication that the PCAST Committee made any effort to become informed to opine on the reliability and validity of probabilistic genotyping.

The PCAST Committee simply ignored a wealth of validation data residing in crime laboratories. If the PCAST Committee had taken a holistic approach, they would have considered the totality of data in determining whether there is support for the validity and reliability of probabilistic genotyping. Peer-review publications by the developers and validation data by the users combined clearly support the software and its applications. Indeed, this failure of the PCAST Committee of not considering all available data is reminiscent of a similar situation that occurred 25 years ago with another report – the National Research Council I Report (NRC I) (13). The NRCI Report proposed a non-scientific, *ad hoc* way to calculate statistics called the ceiling principle. The ceiling principle had no genetics foundation or validity and was roundly rejected. One of the bases for the proposed ceiling principle approach (espoused by the NRC I Committee) was a lack of population data. There were substantial population data in crime

laboratories world-wide at the time the NRC I Report was published; but the NRC I Committee did not seek out the data. As soon as the NRC I Report was published, I reached out to my colleagues around the world and gathered the existing data which were then compiled into a five volume compendium (14). If the NRC I Committee had chosen to consider extant population data, they might have prepared a more informed Report. The outcome was that the National Academy of Sciences convened a second committee and produced the sound NRC II Report (10), which was steeped in fundamental population genetics and statistical applications. The findings of the NRC II Report in part were based on the data I complied in the five volume compendium which were available prior to the publication of the rejected NRC I Report. The PCAST Report has taken the same blinded approach and ignored extant data with a similar outcome as 25 years ago – a report that provides little value for assessing the state-of-the-art and even less value for providing guidance to improve the forensic sciences.

In conclusion, the few examples above demonstrate that the PCAST Report 1) is **not** scientifically sound, 2) is **not** based on data, 3) is **not** well-documented, 4) misapplies statistics, 5) is full of inconsistencies, and 6) does **not** provide helpful guidance to obtain valid results in forensic analyses.

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I declare under penalty of perjury that the forgoing is true and correct to the best of my knowledge.

Bruce Budowle, Ph.D.
Director
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Email: (b) (6) @unthsc.edu
Tel: (b) (6)

RE: Northern District of California Judicial Conference

From: "Cadet, Chinhayi (USACAN)" <(b) (6) >
To: "Hunt, Ted (ODAG) (JMD)" <(b) (6)
Date: Fri, 09 Feb 2018 12:33:52 -0500

Hi Ted,

This is perfect. Thank you!

Best,
Chinhayi

From: Hunt, Ted (ODAG) [mailto:(b) (6)
Sent: Friday, February 09, 2018 6
To: Cadet, Chinhayi (USACAN) <(b) (6)
Subject: RE: Northern District o onference

Chinhayi,

Short bio and photo are attached

Thanks for the information.

Ted

From Cadet, Chinhayi (USACAN) [mailto (b) (6)]
Sent: Thursday, February 8, 2018 6:43 PM
To Hunt, Ted (ODAG) (b) (6)
Subject: RE: Northern District of California Judicial Conference

Hi Ted,

For your travel authorization paperwork, I wanted to let you know that our group has a discounted rate at the hotel -- $189 (for a room) to $209 (for a uite) A li t of the judge and peaker attending will be ent to the Silverado, o they'll have a room set aside for you at the discounted rate. In late February, everyone invited will receive an email with links to register for the conference and to reserve their room through the conference website.

In the meantime, can you plea e end me a head hot and a bio of appro imately 150 word ? I need to ubmit your headshot and bio by February 16 for the conference materials. Thank you.

Be t,
Chinhayi

From: Cadet, Chinhayi (USACAN)
Sent: Thursday, January 25, 2018 2:07 PM
To: 'Hunt, Ted (ODAG)' <(b) (6)
Subject: RE: Northern District of California dicial Conference

Hi Ted,

Thi i wonderful new ! Thank you for accepting the invitation Once additional information about the conference becomes available, I will forward the information to you. On a related note, the Honorable Haywood Gilliam will be moderating the debate, and I anticipate that we will be having a teleconference at some point in late February or early March to discuss logistics of the debate. I'll also reach out to you regarding scheduling of the teleconference as the conference date approache Thank again, and I look forward to eeing you in April

Best,
Chinhayi

From Hunt, Ted (ODAG) [mailto (b) (6)
Sent: Thursday, January 25, 2018 6:37 AM
To Cadet, Chinhayi (USACAN) (b) (6)
Subject: RE: Northern District of California Judicial Conference

Hi Chinhayi,

Thanks very much for your call and follow-up email. I can confirm my participation, subject to travel authorization to attend the meeting. I don't anticipate any problems. Once additional information about the meeting becomes available, please forward that to me.

Thanks very much for the invitation, and I look forward to seeing you in April.

Ted

From: Cadet, Chinhayi (USACAN) [mailto [redacted] (b) (6)
Sent: Wednesday, January 24, 2018 3:45 PM
To Hunt, Ted (ODAG) [redacted] (b) (6)
Subject: Northern District of California Judicial Conference

Hi Ted,

As a Lawyer Representa ve for the Northern District of California, it was a pleasure to talk with you this afternoon regarding my request for you to speak at the Northern District of California Judicial Conference in in Napa, California, on April 21, 2018. The Northern District of California Judicial Conference will be held from April 20-22, 2018, at the Silverado Resort in Napa, California

The Criminal Breakout Session is scheduled to take place from 3 00 4 00 p m , on Saturday, April 21, 2018 The Criminal Breakout Session will consist of an Oxford-style debate regarding the merits of the report issued by the President's Council of Advisors on Science and Technology on *Forensic Science in Criminal Courts Ensuring Scientific Validity of Feature Comparison Methods* ("the PCAST report"). We would love to have you argue against the proposi on that the recommenda ons of the PCAST report should be adopted Chris Fabricant of the Innocence Project will be arguing in favor of the proposi on. Our judges are all very excited about this debate, which will illuminate both sides of this important issue to our bench Please let me know if you have any ques ons Thanks!

Best,
Chinhayi

Slides for the Forensic Science Symposium

From: "Smith, David L. (USAEO)" <(b) (6) >
To: "Hunt, Ted (ODAG)" <(b) (6)
Date: Wed, 25 Jul 2018 16:21:37 -0400
Attachment 18 08 07 NAAG Foren ic di covery ppt (3 14 MB)

Ted,

FYI, these are the slides I plan to send to NAAG for my segment on Forensic Discovery at the Forensic Science Symposium on August 7. Credit for the list of cases at the end goes to John McEnany of SDNY who created the list (to which I added a few cases).

Dave

David L. Smith
Counsel for Legal Initiatives
EOUSA
(b) (6)

Forensic Science Discovery and Disclosure in Criminal Cases

David L. Smith, Counsel for Legal Initiatives
Executive Office for United States Attorneys
Department of Justice

August 7, 2018

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Overview

- The importance of getting forensic discovery right
- Context and pressure points.
- Sources of discovery and examples
- The Department of Justice's policy on forensic discovery.
- Practical suggestions

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Forensic evidence is powerful

- It may be the best evidence in your case
- Take the time to present it fully and accurately
- Ensure that you meet your discovery obligations to allow the defense to fully examine the evidence

Jury expectations are high

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Context: Forensics Under a Microscope

- 2009: NAS report, "Strengthening Forensic Science in the United States" strongly criticized the state of forensic science
- 2012: negative publicity re: flawed hair and fiber analysis
- 2013: National Commission on Forensic Science (May 2013 – April 2017)
- 2016: PCAST Report, "Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods."

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Context: Discovery Under a Microscope

- 2009: Ted Stevens case dismissed
- 2010: Department of Justice adopts mandatory discovery, Brady/Giglio Training
- 2010-2012:
  - Judicial Conference seeks to change Rule 16
  - Murkowski proposed legislation
- 2013: Kozinski Dissent in Olsen case
- 2017: DOJ's amended forensic discovery policy

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Sources of Discovery

- Due Process Clause of the Constitution
  - **Brady v. Maryland,** Exculpatory information
  - **Giglio v. United States,** Impeaching information

  - Defendant must show (1) the evidence at issue is favorable to defendant, (2) it has been suppressed, and (3) defendant was prejudiced, *i.e.*, the suppressed evidence was material and its absence has shaken confidence in the verdict
  - Form of the evidence is irrelevant as to whether it is Brady; could be spoken words not reduced to writing

Sources of Discovery

- Federal Criminal Rules:
  - Results or reports of any scientific test or experiment
  - A written summary of any expert testimony Govt. intends to use at trial
  - Documents & items “material to preparing the defense”

Sources of Discovery

- Jencks Act (or state equivalent): a written statement (report, email, memo) by a testifying forensic witness may be subject to disclosure if it relates to the subject matter of his or her testimony.

- DOJ policy (your agency equivalent)
- State bar rules, Model Rule 3.8(d)

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Basic Point

- **Discovery and admissibility are separate**

- **Disclosure doesn't mean you concede the information is admissible**
  - In Camera Review
  - Ex Parte Review
  - Motions in Limine
  - Protective Orders

Brady/Giglio Considerations and Examples

- Is the analyst on the Prosecution Team? (Gov't employee or retained expert?) (Beard)
- Support for defense theories in our possession (Benn, Severns, Howard, Wood)
- Learn the science (Crasten)
- Generally not required to produce new evidence, *i.e.*, conduct tests, or to disclose the existence of non-Prosecution Team experts that contradict Gov't's case (Batchilly, Brim)

DOJ Forensic Discovery Policy

- Forensic expert's laboratory report
- Written summary for any forensic expert the Government intends to call as an expert at trial
- Expert's qualifications and a brief summary of analyst's experience testifying as an expert witness.
- But it goes beyond the requirements of Federal Rule 16 . . .

DOJ Forensic Discovery Policy

- It requires obtaining the lab or forensic expert's "**case file**"
  - may include a chain-of-custody log; photographs of physical evidence; analysts' worksheets or bench notes; a scope of work; an examination plan; and data, charts and graphs that illustrate the results of the tests conducted.