

SUPERIOR COURT OF THE DISTRICT OF COLUMBIA

THE Criminal Division - Felony Branch

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UNITED STATES

v.

HAMZA KEITA

2009 OCT 30 P 3:32

FILED

: Criminal Case No. 2008 CF 2 26777

: Hon. Robert E. Morin

: Trial Date: February 22, 2009

MOTION TO EXCLUDE LATENT FINGERPRINT TESTIMONY

Mr. Hamza Keita, through undersigned counsel, respectfully moves this Court to exclude the latent fingerprint testimony pursuant to *Dyas v. United States*, 376 A.2d 827 (D.C. 1977), and *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), the Due Process Clause of the Fifth Amendment, and the Sixth Amendment, as the relevant scientific community does not generally accept that latent fingerprint analysis can reliably and accurately demonstrate a connection between a latent print and a specific individual.

On February 18, 2009, the prestigious National Research Council of the National Academy of Sciences published a watershed report, concluding that latent fingerprint analysis has not been "rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source." Nat'l Research Council, Nat'l Acad. of Science, *Strengthening Forensic Science in the United States: A Path Forward*, [hereinafter 2009 NRC Report], 7 (emphasis added). The report is unequivocal: there is no existing research that demonstrates that latent fingerprint identification evidence is valid.

The 2009 NRC Report constitutes the latest and most definitive declaration from the scientific community that has increasingly recognized the absence of evidence validating fingerprint identifications. For although fingerprint evidence has enjoyed uncritical acceptance

from courts for over 100 years, “[m]any of the most basic claims of fingerprint identification have never been tested empirically, and . . . in the strong form in which they usually are presented, those claims in fact are unprovable.” 4 Mod. Sci. Evid. § 32:1.

The D.C. Court of Appeals has made clear: “If scientists significant either in number or expertise publically oppose [a technique or method] as unreliable, then that [technique or method] does not pass muster under *Frye*.” *United States v. Jenkins*, 887 A.2d 1013, 1022 (D.C. 2005) (quoting *United States v. Porter*, 618 A.2d 629, 634 (D.C. 1992)). The 2009 NRC Report reflects the current view of scientists significant both in number and expertise. The National Research Council (NRC) Committee tasked by Congress with studying forensic science included members of the scientific community, forensic practitioners, and legal experts. The Committee reviewed studies related to forensic disciplines, conducted independent research, heard testimony from experts in the field, and concluded there is no scientific evidence that latent fingerprint analysis can consistently and accurately “demonstrate a connection between evidence and a specific individual or source.” 2009 NRC Report at 7.

As the 2009 NRC Report explained, the method of evaluating latent fingerprints, commonly known as ACE-V, “is not specific enough to qualify as a validated method for this type of analysis. [The method] does not guard against bias; is too broad to ensure repeatability and transparency; and does not guarantee that two analysts following it will obtain the same results.” *Id.* at 142. The NRC cited “a thorough analysis of the ACE-V method” and its “unambiguous” conclusion: “We have reviewed available scientific evidence of the validity of the ACE-V method and **found none.**” *Id.* at 143 (quotation and citation omitted, emphasis added).

“Whatever the merits of the prior decisions,” new developments – such the 2009 NRC Report and recent scientific research – can “chang[e] the scientific landscape considerably and demonstrate[e] indisputably that there is no general acceptance of the current process.” *Porter*, 618 A.2d at 639 n.17 (quotation and citation omitted). To be sure, many fingerprint examiners still forcefully vouch for the validity of the ACE-V method, but the conflict between fingerprint practitioners and scientists, including the NRC, “a body composed of . . . a distinguished cross-section of the scientific community,”<sup>1</sup> constitutes the very disagreement that makes expert testimony inadmissible under *Frye* and *Dyas*. “The very existence of a dispute precludes admission.” *Jenkins*, 887 A.2d at 1022. Accordingly, the latent fingerprint testimony should be excluded.

### ARGUMENT

The question before the court is whether the claim by latent print examiners that they can accurately and reliably connect a latent print to a specific person is generally accepted in the relevant scientific community.<sup>2</sup> Part I of this Motion defines **who** constitutes the relevant scientific community, and Part II describes **what** that community generally accepts: namely, that there is no evidence that latent print analysis can accurately and reliably connect a latent print to a specific person. First, however, this Motion addresses any possible misapprehension that the longstanding acceptance of fingerprint evidence somehow insulates it from review, or makes a new assessment of its validity unnecessary.

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<sup>1</sup> *Roberts v. United States*, 916 A.2d 922, 930 (D.C. 2007) (quotation and citation omitted).

<sup>2</sup> As explained in more detail in Part II(A), *infra*, a “latent” print is a fingerprint or part of a fingerprint that is associated with a crime (i.e. found at the crime scene), that is compared with the prints of a known individual. “Latent print identification” is the method of identifying people by comparing fingerprints, and is alternately described by practitioners as “friction ridge identification.” See David R. Ashbaugh, *QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLGY* (CRC Press, 1999).

At first blush it may be difficult to conceive of fingerprint identification as lacking scientific support. After all, fingerprints are enshrined not just in the law, but in our cultural imagination as irrefutable proof of identity. Yet fingerprinting was introduced in the early 1900s, when standards for admissible science were considerably lower: there “was no doctrinally mandated gatekeeping approach to expert evidence like those that apply today,” whether under *Frye* or *Daubert*. Jennifer L. Mnookin, *Fingerprint Evidence in an Age of DNA Profiling*, 67 Brook. L. Rev. 13, 32 (Fall 2001). “Courts began admitting fingerprint evidence early last century with relatively little scrutiny, and later courts, relying on precedent, simply followed along.” *United States v. Crisp*, 324 F.3d 261, 277 (4th Cir. 2003) (Michael, J., dissenting).<sup>3</sup> As the 2009 NRC Report observed, on the basis of these early cases, “[o]ver the years, courts have admitted fingerprint evidence, even though the evidence has made its way into the courtroom without empirical validation of the underlying theory and/or its particular application.” 2009 NRC Report at 102 (quotation and citation omitted).

The scientific and legal communities were recently jolted out of their unquestioning acceptance of fingerprint evidence by three new developments. First, there were several well-publicized misidentifications using latent fingerprint evidence, none more damning of the practice than the FBI’s misidentification of Brandon Mayfield as a suspect in the Madrid train bombing.<sup>4</sup> Second, advances in DNA technology raised the standard for all forensic sciences. In particular, “[d]uring the effort to validate DNA evidence for courtroom use . . . it became

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<sup>3</sup> See Christophe Champod, et al, FINGERPRINTS AND OTHER RIDGE SKIN IMPRESSIONS [hereinafter Champod], 196 (CRC Press, 2004) (“Court acceptance without much scrutiny in adversarial legal systems has led to an almost blind faith in fingerprint evidence.”); 4 Mod. Sci. Evid. § 32:1 (“The seminal cases admitting fingerprint evidence in American courts paid so little attention to the foundation of the asserted science that they offer no help in evaluating the admissibility of fingerprint identification evidence . . .”).

<sup>4</sup> See *infra* Part II(B)(2).

apparent that assumptions about fingerprint evidence had been reached without the scientific scrutiny being accorded DNA.” 2009 NRC Report at 104.<sup>5</sup> Finally, the forensic science community itself began to acknowledge the need for scientific evaluation. In fact, it was the Consortium of Forensic Science Organizations that was largely responsible for convincing Congress that the 2009 NRC Report was needed.<sup>6</sup>

The law is capable of responding to fundamental shifts in what the relevant scientific community generally accepts. Although the particular evidence at issue in *Frye* was a “novel” scientific technique, 293 F. at 1014, there is no “novelty” requirement for challenging scientific evidence.<sup>7</sup> Courts may take judicial notice of the general acceptance of scientific techniques, and precedent admitting evidence “may control subsequent trials,” but only “**until new evidence is presented reflecting a change in the attitude of the scientific community.**” *Jones v. United*

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<sup>5</sup> See also Champod at 32 (“With the extensive use of probability-based DNA evidence and the evolving requirements for the admissibility of scientific evidence in the U.S., older identification fields such as fingerprints are being subjected to more rigorous scrutiny . . . .”).

<sup>6</sup> As the director of the professional association for latent print examiners, the International Association for Identification (IAI), stated: “The Consortium of Forensic Science Organizations (CFSO) of which IAI is a member was largely responsible for convincing Congress of the need for th[e] committee [that produced the 2009 NRC Report].” Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), [www.theiai.org/current\\_affairs/nas\\_memo\\_20090219.pdf](http://www.theiai.org/current_affairs/nas_memo_20090219.pdf); see also The Honorable Harry T. Edwards, co-chair, 2009 NRC Report Committee, *Solving the Problems that Plague the Forensic Science Community*, Keynote Address at Conference: *Forensic Science for the 21st Century: The National Academy of Sciences Report and Beyond* [hereinafter Edwards Keynote], 1 (April 3, 2009) (“Congress passed the legislation [mandating the Report] in response to a *call for help* from forensic professionals who understood the problems.”) (emphasis in original).

<sup>7</sup> See, e.g., David H. Kaye et al, *THE NEW WIGMORE: EXPERT EVIDENCE* § 8.3, 299 (2004) (The “concept of novelty is not part of *Frye*” and *Frye* scrutiny applies “to theories that are boringly familiar but are yet to be adequately validated as much as to theories that are strikingly original.”); John William Strong, *Language and Logic in Expert Testimony: Limiting Expert Testimony by Restrictions of Function, Reliability, and Form*, 71 Or. L. Rev. 349, 367 (Summer 1992) (“no apparent reason exists, as has repeatedly been suggested, for limiting the standard to ‘novel’ scientific evidence”); *id.* at 367 n.76 (stating that “[t]he origin of this qualification, if it is in fact a qualification, is obscure” and suggesting that it originated from an article that did not, in fact, supply any rationale for such a limitation).

*States*, 548 A.2d 35, 46 n.9 (D.C. 1988) (quoting *People v. Kelly*, 549 P.2d 1240, 1245 (Cal. 1976)) (emphasis added). Moreover, “due process considerations require courts to intervene if scientific opinion shifts so dramatically that previously accepted methods are considered unreliable.” *Armstead v. State*, 673 A.2d 221, 243 (Md. 1996). A defendant has the right to demand “that the trial be a fair one and that the sum of the evidence introduced against [him] must be sufficiently probative to prove guilt beyond a reasonable doubt.” *United States v. Horn*, 185 F. Supp. 2d 530, 550 (D. Md. 2002). “Expedient as it may be for courts to take judicial notice of scientific or technical matters . . . this cannot be done in the face of legitimate challenges to the reliability and accuracy” of those methods. *Id.* Indeed, “[s]upposedly valid ‘science’ has not infrequently been unmasked.” *State v. O’Key*, 899 P.2d 663, 673 n.9 (Or. 1995) (quotation, citation, and footnotes omitted). In one recent example, the “supposedly valid” forensic science of comparative bullet lead analysis (CBLA) was unmasked as unreliable, due in part to another report of the NRC. A description of the evolution of the judicial treatment of CBLA in response to a shift in scientific opinion – as reflected in a NRC report – and its ultimate exclusion from the courtroom is attached at Appendix A.

Courts in *Frye* jurisdictions have accordingly not shied away from “considering whether a theory, which had been accepted in the scientific and legal communities, continues to meet the standard.” *Blackwell v. Wyeth*, 971 A.2d 235, 243 (Md. 2009); *see, e.g., Benn v. United States*, 978 A.2d 1257, 1276-77, 1278 (D.C. 2009) (in determining the admission of expert testimony, “automatic reliance on *Dyas* or on other past cases” is not appropriate “except in clear-cut cases,” instead court “must consider . . . the **current** state of generally-accepted scientific research”) (emphasis added); *People v. Venegas*, 954 P.2d 525, 528 (Cal. 1998) (admission of evidence becomes precedent “in the absence of evidence that the prevailing scientific opinion

has materially changed”).<sup>8</sup> “Science moves inexorably forward and . . . [t]he judicial system, with its search for the closest approximation to the ‘truth,’ must accommodate this ever-changing scientific landscape.” *State v. Behn*, 868 A.2d 329, 343 (N.J. Super. Ct. App. Div. 2005). This Court’s assessment of the scientific community’s current opinion of latent print identification is in no way limited by the uncritical acceptance of such evidence in the past.

## I. THE RELEVANT SCIENTIFIC COMMUNITY

### A. THE TEST OF GENERAL ACCEPTANCE

The pivotal question for the admission of expert testimony is whether the party proffering the expert can show that “the techniques from which the evidence is derived have gained general acceptance” in the relevant scientific community. *Roberts v. United States*, 916 A.2d 922, 929 (D.C. 2007). “In evaluating the proffered expert, the trial court, first, applies the well known three-part test found in *Dyas v. United States*.” *Jones*, 548 A.2d at 40. “[T]he third *Dyas* requirement reflects *Frye*’s standard that there be ‘general acceptance’ of the underlying methodology in the relevant scientific community.” *Benn*, 978 A.2d at 1269.

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<sup>8</sup> See also *State v. Bible*, 858 P.2d 1152, 1187 (Ariz. 1993) (noting that “[a]lthough courts have found DNA testing admissible . . . recent developments - scientific and judicial - drastically alter the relevant analysis”); *Porter*, 618 A.2d at 639 n.17 (citing with approval conclusion that “[w]hatever the merits of the prior decisions” a debate in the scientific literature “demonstrates indisputably that there is no general acceptance of the current process”) (quotation and citation omitted); *People v. Barney*, 8 Cal. App. 4th 798, 810-11 (Cal. App. 1992) (“Even if the technique was previously determined correctly to have been generally accepted, the converse may subsequently be shown by evidence ‘reflecting a change in the attitude of the scientific community.’”) (quoting *Kelly*, 549 P.2d at 1245); *People v. Smith*, 215 Cal. App. 3d 19, 25 (Cal. App. 1989) (noting that defendant may not be “foreclosed from showing new information which may question the continuing reliability of the test in question or to show a change in the consensus within the scientific community concerning the scientific technique”); *Moore v. United States*, 374 A.2d 299, 302 (D.C. 1977) (considering appellant’s claim that tests “no longer have general acceptance in their particular field”), *abrogated on other grounds by Thomas v. United States*, 650 A.2d 183 (D.C. 1994).

It is “[t]he party proffering the expert witness [who] must satisfy all three components of the test.” *Burgess v. United States*, 953 A.2d 1055, 1062 (D.C. 2008); *see also Roberts*, 916 A.2d at 929 (proponent of the evidence must “demonstrate by a preponderance of the evidence that this technology has been generally accepted”) (quotation and citation omitted). The history of admitting fingerprint evidence does not serve to shift the burden of proof away from the party proffering the expert. Of course, where the admission of expert testimony is appropriate for judicial notice, the proffer need not be very substantive and can depend on prior cases. But “except in [such] clear-cut cases,” “automatic reliance on *Dyas* or on other past cases” is insufficient. *Benn*, 978 A.2d at 1276-77.

When, as here, the third *Dyas* criterion is at issue, general acceptance “becomes the ‘threshold question’ of admissibility, to be resolved as a matter of law before the court exercises its discretion in applying all the criteria to a particular proffered expert.” *Jones*, 548 A.2d at 40. The threshold requirement of general acceptance helps “guarantee that reliability [of the proffered testimony] will be assessed by those in the best position to do so: members of the relevant scientific field . . . .” *State v. Bible*, 858 P.2d 1152, 1181 (Ariz. 1993) (quotations and citation omitted).<sup>9</sup> “The *Frye* standard recognizes that judges do not have the expertise required to decide whether a challenged scientific theory is correct, and therefore courts defer this judgment to scientists.” *State v. Copeland*, 922 P.2d 1304, 1312 (Wash. 1996) (quotation and citation omitted). The standard does not require “unanimity among scientists,” *Roberts*, 916

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<sup>9</sup> In the law, “reliability” encompasses (a) the scientific term “validity” (which refers to accuracy) and (b) the scientific term “reliability” (which refers to consistency). A technique is legally reliable if it is consistently accurate – if it repeatedly reaches the right result. *See, e.g., Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 590 n.9 (1993) (“[O]ur reference here is to evidentiary reliability—that is, trustworthiness. . . . In a case involving scientific evidence, evidentiary reliability will be based upon scientific validity.”). In sum, general acceptance = reliability (in the legal sense) = valid and reliable (in the scientific sense). This Motion uses the term “reliable” in the legal sense, and thus uses it interchangeably with “valid” and “accurate.”

A.2d at 929, however, “[i]f scientists significant either in number or expertise publically oppose [a technique or method] as unreliable, then that [technique or method] does not pass muster under *Frye*.” *Jenkins*, 887 A.2d at 1022 (quoting *Porter*, 618 A.2d at 634). As the court is not in a position to evaluate the reliability of a method, it is likewise not equipped to choose which side of a scientific debate deserves deference. Thus, “[t]he very existence of a dispute precludes admission.” *Id.*<sup>10</sup>

## B. DETERMINING THE RELEVANT SCIENTIFIC COMMUNITY

The relevant scientific community for latent print identification includes impartial scientists and scholars as well as latent print examiners. Furthermore, the 2009 NRC Report constitutes an authoritative work for purposes of determining general acceptance within that community.

### 1. **The relevant scientific community for latent print identifications includes impartial scientists as well as latent print examiners.**

“General acceptance” of a scientific technique is a useful proxy for reliability only if the community whose votes are being counted is capable of determining whether the technique is, in fact, reliable. Courts have consistently held that “[w]hile views of forensic scientists have weight and must be considered, members of the relevant scientific field will include those whose

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<sup>10</sup> See also *Clemons v. State*, 896 A.2d 1059, 1078 (Md. 2006) (evidence not admissible where “a genuine controversy exists within the relevant scientific community”); *Copeland*, 922 P.2d at 1312 (“If there is a significant dispute between qualified experts as to the validity of scientific evidence, it may not be admitted.”) (quotation and citation omitted); *Lohmeier v. Hammer*, 248 P.3d 101, 113 (Ariz. Ct. App. 2006) (“significant disputes between qualified experts will preclude a finding of general acceptance”) (quotation and citation omitted); *In re Detention of Traynoff*, 831 N.E.2d 709, 723 (Ill. App. Ct. 2005) (“In determining what constitutes ‘general acceptance,’ the question is whether there is consensus versus controversy over a particular technique.”); *Comm. v. Lanigan*, 596 N.E.2d 311, 316 (Mass. 1992) (no general acceptance in light of “the lively, and still very current, dispute” in the field); *People v. Barney*, 10 Cal. Rptr. 2d 731, 737 (Cal. Ct. App. 1992) (“If the scientific literature discloses that the technique is deemed unreliable by ‘scientists significant either in number or expertise . . . ,’ the court may safely conclude there is no general acceptance.”) (citation omitted).

scientific background and training are sufficient to allow them to comprehend and understand the process and form a judgment about it.” *Porter*, 618 A.2d at 634 (quotation and citation omitted). Although input from forensic practitioners is important, it is clear that the relevant community must include scientists “competent to make professional judgments concerning experiments undertaken by others.” *Reed v. State*, 391 A.2d 364, 377 (Md. 1978); *see also State v. Russell*, 882 P.2d 747, 761 (Wash. 1994) (“a court looks not only to the technique’s acceptance in the forensic setting but also to its acceptance by the wider scientific community familiar with the theory and underlying technique”).<sup>11</sup> There is a critical “difference between practicing a technique and assessing the validity of a technique,”<sup>12</sup> thus a ““technician’s testimony should never suffice to establish the validity of a . . . technique: The technician . . . knows how, but not why. Because it is critical to know the why, . . . the views of scientists are essential.”” *People v. Seda*, 529 N.Y.S.2d 931, 939 n.15 (N.Y.Sup. 1988) (quoting Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, a Half-Century Later*, 80 Col. L. Rev. 1197, 1214-15 (1980)) (internal quotation and modification omitted).

Courts have consistently declined to limit the relevant community to forensic practitioners when evaluating the general acceptance of a range of forensic techniques, including

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<sup>11</sup> *See also Blackwell*, 971 A.3d at 252 (describing relevant community as “scientists with sufficient training and expertise to permit them to comprehend novel scientific methods”); *Ramirez v. State*, 810 So.2d 836, 851 (Fla. 2001) (“[G]eneral scientific recognition requires the testimony of impartial experts or scientists. It is this independent and impartial proof of general scientific acceptability that provides the necessary *Frye* foundation.”); *State ex rel. Collins v. Sup. Ct.*, 644 P.2d 1266, 1285-86 (Ariz. 1982) (describing relevant community as “disinterested and impartial experts, knowledgeable in the scientific specialty which deals with and uses such procedures or techniques”); *People v. Collins*, 405 N.Y.S.2d 365, 368 (N.Y.Sup. 1978) (observing that “expertise in disciplines tangential to the one under consideration could have significant bearing on the issue” of general acceptance); *Kelly*, 549 P.2d at 1250 (describing relevant community as those “engaged in the scientific fields”).

<sup>12</sup> Simon A. Cole, *Out of the Daubert Fire and Into the Fryeing Pan? Self-Validation, Meta-Expertise and the Admissibility of Latent Print Evidence in Frye Jurisdictions*, 9 Minn. J. L. Sci. & Tech. 453, 487 (Spring 2008).

field sobriety tests, tests of sexual dangerousness, handwriting analysis, medical causation, electrophoretic typing of human fluid stains, polygraph examinations, voiceprint experiments or spectrograms, and hair analysis. (See Appendix B for representative cases for each of these forensic techniques.) Courts have not only construed the relevant community broadly because forensic practitioners' "lack of formal training and background in the applicable scientific disciplines ma[k]e them unqualified to state the view of the relevant community of impartial scientists," *People v. Brown*, 726 P.2d 516, 532-33 (Cal. 1985), *rev'd on other grounds in California v. Brown*, 479 U.S. 538 (1987)) – but also because the livelihood of forensic technicians is tied to the continued acceptance of the discipline. "To allow general scientific acceptance to be established on the testimony alone of witnesses whose livelihood is intimately connected with a new technique would eliminate the safeguard of scientific community approval implicit in the general scientific acceptance test." *People v. Young*, 391 N.W.2d 270, 276 n.24 (Mich. 1986).<sup>13</sup> Thus the relevant community properly includes "disinterested and impartial

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<sup>13</sup> See also *United States v. Oskowitz*, 294 F. Supp. 2d 379, 384 (E.D.N.Y. 2003) (declining to limit relevant community to one that "has not been a 'financially disinterested independent community, like an academic community'" (citation omitted); *In re Commitment of Burton*, 884 So.2d 1112, 1118 (Fla. App. 2004) (Altenbernd, J., concurring) ("relevant scientific community . . . should . . . not [include] merely the group of licensed professionals who are making a living by relying upon these tests"); *United States v. Starzecpyzel*, 880 F. Supp. 1027, 1038 (S.D.N.Y. 1995) (declining to limit relevant community to "community [that] is devoid of financially disinterested parties, such as academics"); *People v. Wesley*, 633 N.E.2d 451, 465 (N.Y. 1994) ("The opinions of two scientists, both with commercial interests in the work under consideration and both the primary developers and proponents of the technique, were insufficient to establish 'general acceptance' in the scientific field."); *State ex rel. Collins v. Sup. Ct.*, 644 P.2d 1266, 1285-86 (Ariz. 1982) ("[a]cceptance must be by those experts who are relatively disinterested and impartial and whose livelihood, therefore, is not intimately connected with approval of the technique."); *People v. Barbara*, 255 N.W.2d 171, 180 (Mich. 1977) ("one would want, where the task was to demonstrate general scientific acceptability, an acknowledgment of the value of the device and the techniques by disinterested scientists whose livelihood was not intimately connected with it"); *State v. Thompkins*, 891 So.2d 1151, 1153 (Fla. Dist. Ct. App. 2005) ("Frye requires more than the testimony of an expert who has a personal stake in the theory or is prone to an institutional bias.").

experts in the scientific community,” *id.* at 274, who are “qualified to assess the general validity of a scientific method.” *Jones*, 548 A.2d at 39 (quotations and citation omitted).

**2. The report of the National Research Council reflects the conclusions of the relevant scientific community for latent print identification.**

The task of defining the relevant scientific community is simplified here because the National Research Council has convened the relevant scholars, scientists, and experts who are qualified to evaluate latent print identification. Courts have uniformly recognized that the conclusions of the National Research Council regarding the reliability of a particular methodology “can easily be equated with general acceptance of those methodologies in the relevant scientific community.” *Porter*, 618 A.2d at 643 n.26.

The National Research Council, the operating arm of the National Academies, has been committed since 1916 “to providing elected leaders, policy makers, and the public with expert advice based on sound scientific evidence.”<sup>14</sup> “When NAS [National Academy of Sciences] is requested to do a study, it convenes a Committee, composed of prominent scientists and engineers in the relevant field of study . . . . The Committee reviews the relevant data, and undertakes an extended series of deliberations involving candid exchanges of views by the Committee members in closed session. . . . The reports are then submitted to a review panel composed of members other than those on the authoring Committee.” *Plough Inc. v. Nat’l Acad. of Sciences*, 530 A.2d 1152, 1156 (D.C. 1987). “This independent, rigorous review is a hallmark that distinguishes the National Academies from many other organizations offering scientific and technical advice.”<sup>15</sup>

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<sup>14</sup> See [sites.nationalacademies.org/nrc/index.htm](http://sites.nationalacademies.org/nrc/index.htm).

<sup>15</sup> See [sites.nationalacademies.org/nrc/PoliciesandProcedures/index.htm](http://sites.nationalacademies.org/nrc/PoliciesandProcedures/index.htm).

In selecting committee members, the NRC's focus is on "ensur[ing] that the relevant points of view are . . . reasonably balanced so that the committee can carry out its charge objectively and credibly."<sup>16</sup> Indeed, courts have routinely recognized that NRC committees represent "a distinguished cross section of the scientific community." *Porter*, 618 A.2d at 643 n.26. (See Appendix C for case law describing the NRC committees as representative of a cross section of the scientific community.) In light of the impartiality and expertise that are the hallmarks of NRC committees, courts consistently **"have treated the reports of the NRC as authoritative works for purposes of determining generally accepted standards within the scientific community . . ."** *Com. v. Gaynor*, 820 N.E.2d 233, 250 (Mass. 2005) (emphasis added). (See Appendix C for case law citing the NRC as authoritative for purposes of determining general acceptance.) Courts also consistently acknowledge the expertise of the National Academy of Sciences, describe NRC reports as "authoritative," *Roberts*, 916 A.2d at 930, and both courts and federal agencies follow the recommendations of NRC reports when making a range of decisions. *See, e.g., State v. Tester*, 968 A.2d 895, 906 (Vt. 2009) ("The courts have almost uniformly followed the recommendation of the National Research Council."); *Blasioli*, 713 A.2d at 1120 ("courts have traditionally deferred to pronouncements from the National Academy of Sciences"). (See Appendix C for illustrative case law.)

The 2009 NRC Report on the forensic sciences is no exception. The authoring Committee was made up of an illustrious group of "members of the forensic science community," "members of the legal community," including the leading authorities on scientific evidence issues, "and a diverse group of scientists," including renowned statisticians. 2009 NRC Report at 2. Although some print examiners have asserted – in the aftermath of the report – that

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<sup>16</sup> See [www8.nationalacademies.org/cp/information.aspx?key=Committee\\_Appointment](http://www8.nationalacademies.org/cp/information.aspx?key=Committee_Appointment).

forensic practitioners were not sufficiently represented on the Committee, this claim does not withstand scrutiny. Committee members included Dr. Randall S. Murch, the former deputy director of the FBI Laboratory; Peter M. Marone, who has worked in crime laboratories for over 30 years and is the Executive Director of the Virginia Department of Forensic Sciences; Dr. Robert Shaler, who was formerly on the staff of the Pittsburgh Crime Laboratory and New York City's Medical Examiner's Office, and is the Director of the Forensic Science program at Pennsylvania State University; and Dr. Jay A. Siegel, the Director of Forensic and Investigative Sciences Program at Indiana University-Purdue University, and author of numerous forensic science textbooks, who is also the editor in chief of the Encyclopedia of Forensic Sciences. (See Appendix D for a description of each of the individual Committee members.)

To prepare the Report, the Committee "reviewed numerous published materials, studies, and reports related to the forensic science disciplines, engaged in independent research on the subject," and heard extensive expert testimony. 2009 NRC Report at 2. Testifying experts included leading latent fingerprint examiners,<sup>17</sup> representatives of the professional association for latent print examiners, the International Association for Identification (IAI),<sup>18</sup> and representatives of major forensic science organizations and crime labs.<sup>19</sup> The Report was also reviewed by "individuals chosen for their diverse perspectives and technical expertise," including many

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<sup>17</sup> Presenters included Stephen Meagher, the leading Fingerprint Specialist at the FBI and Vice-Chair of the Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST), and Ed German, Latent Print Examiner, U.S. Army, Retired. *Id.* at 309, 307.

<sup>18</sup> The Committee heard from Joe Polski, Chief Operations Advisor, International Association for Identification. *Id.* at 303; *see also* Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), *supra* note 6, ("During the course of the NAS hearings the IAI was invited to present its positions concerning these issues.").

<sup>19</sup> For example, presenters included Bruce A. Goldberger, President-Elect, American Academy of Forensic Scientists; Bill Marbaker, President, American Society of Crime Laboratory Directors; and Joseph A. DiZinno, Assistant Director, Laboratory Division, Federal Bureau of Investigation. *Id.* at 304, 305.

forensic scientists. *Id.* at xii-xiii (listing reviewers).<sup>20</sup> The Report thus shares the characteristics of objectivity, expertise, and rigorous research that have justified the consistent judicial deference to NRC reports.

Indeed, the Supreme Court has already relied on the 2009 NRC Report as authority for the point that “[s]erious deficiencies have been found in the forensic evidence used in criminal trials” and “to refute the suggestion that this category of evidence [the testimony of forensic analysts] is uniquely reliable.” *Melendez-Diaz v. Mass.*, 129 S.Ct. 2527, 2537, 2537 n.6, 557 U.S. \_\_\_ (2009). The Supreme Court also cited the 2009 NRC Report’s discussion of “problems with subjectivity, bias, and **unreliability of common forensic tests such as latent fingerprint analysis . . .**” *Id.* at 2538 (emphasis added). In other words, when the NRC speaks, even the Supreme Court listens.

## **II THE RELEVANT SCIENTIFIC COMMUNITY DOES NOT GENERALLY ACCEPT THAT LATENT FINGERPRINT EXAMINERS CAN ACCURATELY AND RELIABLY CONNECT A LATENT PRINT TO A SPECIFIC INDIVIDUAL TO THE EXCLUSION OF ALL OTHERS**

Despite the historical acceptance of fingerprint evidence, it is now plain that there is no general acceptance in the relevant scientific community for the claim that latent print analysis can match a latent print to a particular person to the exclusion of all others. At the very least there exists a significant dispute that is sufficient to preclude admission of the testimony.

To be clear, the query is not whether there is general acceptance of fingerprints’ uniqueness and permanence. It is undisputed that “[u]niqueness and permanence are necessary conditions for friction ridge identification to be feasible,” 2009 NRC Report at 144, and it is also

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<sup>20</sup> For example, reviewers included Christophe Champod, Professor of Forensic Science, author of *FINGERPRINTS AND OTHER RIDGE SKIN IMPRESSIONS* (CRC Press, 2004), and IAI and SWGFAST member; Barry Fisher, the Crime Laboratory Director for the Los Angeles County Sheriff’s Department; Carl Selavka, former Director of the Massachusetts State Police Crime Laboratory; and David Stoney, forensic scientist and former latent print examiner. *Id.* at xiii.

true that neither uniqueness nor permanence have ever been proven.<sup>21</sup> But even assuming that all fingerprints are both unique and permanent, “those conditions do not imply that anyone can reliably discern whether or not two friction ridge impressions were made by the same person. *Id.* As the 2009 NRC Report explained: “The question is less a matter of whether each person’s fingerprints are permanent and unique – uniqueness is commonly assumed – and more a matter of whether one can determine with adequate reliability that the finger that left an imperfect impression at a crime scene is the same finger that left an impression (with different imperfections) in a file of fingerprints.” *Id.* at 43.<sup>22</sup> Thus the essential question is: does the relevant scientific community accept that latent print identification can do just that – correctly connect a latent print to a particular person? The answer is no.

#### A. THE LATENT PRINT IDENTIFICATION PROCESS

An understanding of the method of latent fingerprint identification is useful before turning to the critiques of the technique by the scientific community. The sources for the following description are proponents of fingerprint identification and print examiners

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<sup>21</sup> Neither uniqueness nor permanence has been proven, although there is some “[s]ome scientific evidence support[ing] the presumption that friction ridge patterns are unique to each person and persist unchanged throughout a lifetime.” 2009 NRC Report at 143-44. As the NRC recognized, “[t]he determination of uniqueness requires [inter alia] . . . calculations of the probability that different objects share a common set of observable attributes. *Id.* at 44. And “[n]one of these variabilities – of features across a population of fingers or of repeated impressions left by the same finger – has been characterized, quantified, or compared.” *Id.* at 144. In short, the determination of uniqueness requires data on fingerprints that do not currently exist.

<sup>22</sup> See 2009 NRC Report at 144 (“Uniqueness does not guarantee that prints from two different people are always sufficiently different that they cannot be confused, or that two impressions made by the same finger will also be sufficiently similar to be discerned as coming from the same source.”); 4 Mod. Sci. Evid. § 32:47 (“The issue is not the finding of two fingerprints that are alike, but rather the finding of prints from two different fingers that can be mistakenly judged to be alike by a fingerprint examination.”); Tamara Lawson, *Can Fingerprints Lie?: Re-weighing Fingerprint Evidence in Criminal Jury Trials*, 31 Am. J. Crim. L. 1, 9 (Fall 2003) (“The center of the current legal debate, however, is not the physiology of fingerprints, i.e., the uniqueness or permanence of the mark . . . . Instead, the issue is whether fingerprint examiners can accurately and conclusively determine the identity of an incriminating latent print found at a crime scene.”).

themselves, including (1) The Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST), the FBI sponsored working group whose focus is to “establish guidelines and standards for the latent print community;”<sup>23</sup> (2) Bruce Budowle and other scientists at the FBI’s forensic laboratory; (3) David R. Ashbaugh, a leading print examiner and author of *QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY* [hereinafter Ashbaugh] (CRC Press, 1999), one of the four texts suggested by the IAI as recommended reading for preparing for the IAI certification test; and (4) Christophe Champod, author of *FINGERPRINTS AND OTHER RIDGE SKIN IMPRESSIONS* [hereinafter Champod] (CRC Press, 2004). This section also relies in large part on the comprehensive study conducted by the Office of the Inspector General into the FBI’s erroneous fingerprint identification of Brandon Mayfield in the Madrid train bombing incident. *See A Review of the FBI’s Handling of the Brandon Mayfield Case, Unclassified and Redacted*, Office of the Inspector General, Oversight and Review Division [hereinafter OIG Report] (March 2006)

The latent fingerprint identification process involves the comparison of a “known print,” a fingerprint taken from a known suspect or defendant, to a “latent print,” a print from an unknown source that has been left at a crime scene or on an object related to the crime.<sup>24</sup> The identification process is a visual comparison of the known and latent prints to see whether, in the

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<sup>23</sup> See [www.swgfast.org/become\\_a\\_member.html](http://www.swgfast.org/become_a_member.html). SWGFAST was established in 1997 and continues to operate through sponsorship from the Federal Bureau of Investigation. Members are from “local, state, and federal law enforcement agencies as well as the forensic community.” SWGFAST Bylaws, [www.swgfast.org/Bylaws\\_3.1.pdf](http://www.swgfast.org/Bylaws_3.1.pdf).

<sup>24</sup> This Motion uses the terms “friction ridge identification,” “latent print identification” and “fingerprint identification” interchangeably. This Motion also uses the terms “identification” and “individualization” interchangeably, in accordance with SWGFAST’s definitions of those terms. See SWGFAST Glossary at 11 (“IDENTIFICATION: See *Individualization*”), [www.swgfast.org/Glossary\\_Consolidated\\_ver\\_1.pdf](http://www.swgfast.org/Glossary_Consolidated_ver_1.pdf).

subjective opinion of the examiner, the prints are sufficiently similar to declare a “match.”<sup>25</sup> The visual process for comparing latent and known prints fingerprints is generally referred to as “ACE-V,”<sup>26</sup> an acronym which describes the four stages of the examination: Analysis, Comparison, Evaluation, and Verification.<sup>27</sup> The description (and critiques) of the ACE-V method apply equally to any similar method that goes by another name but involves the same basic components.

At the analysis stage, the examiner first looks at the latent print and determines whether the print is of sufficient value; in other words, whether the latent print is of adequate size, clarity, and quality to be used in a comparison. There are no national or generally accepted standards for determining whether a print is of sufficient value. Instead, examiners either make their own subjective decision about whether there is “enough” to proceed with the analysis or rely on the standards of their individual lab. In the absence of generally accepted standards, “examiners [or individual labs] subjectively trade off size of fragment and clarity of image, and subjectively conclude that there is or is not enough information in the fragment print to declare that the

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<sup>25</sup> See Ashbaugh at 103 (“The identification process is synonymous with sight.”).

<sup>26</sup> The ACE-V method is distinct from AFIS (Automated Fingerprint Identification System), the computerized system which uses scans of prints to identify a list of possible matches. All fingerprint identifications, whether the print was originally identified through AFIS or not, rely on visual inspection by individual examiners. See 4 Mod. Sci. Evid. § 32:29 (“In no sense is the computer doing the ultimate comparison of suspects’ and crime scene prints: . . . Rather, the computer helps in the selection of candidates. . . . The actual comparison is conducted by the fingerprint examiner using the actual fingerprint evidence.”); OIG Report at 120 (same).

<sup>27</sup> Ashbaugh at 108. The acronym was popularized by leading print examiner David Ashbaugh in the 1990s, Champod at 15, and is “a protocol that examiners are invited to follow during the friction ridge examination process.” Christophe Champod, *Fingerprint Examination: Towards More Transparency*, 7 Law, Probability & Risk 111, 111 (June 2008).

fragment would or would not match any other fingerprint fragment in the world.” 4 Mod. Sci. Evid. § 32:15.<sup>28</sup>

Determining whether a print contains enough information to be analyzed is a significant step in latent print analysis process because latent prints are often incomplete and distorted. After all, “[c]rime scene prints are unintentional, chance prints for which there is no thought (or desire) to produce a clear reproduction.” John P. Nielson [latent print examiner], *Rebutting the “No Fingerprint” Defense*, 39-DEC Prosecutor 32, 36 (2005).<sup>29</sup> Prints left at crime scenes are often distorted by the pressure used to deposit the print, by movement of the finger, by overlapping prints, and by substances on the fingers and surfaces where prints are deposited. (See Appendix E for a description of six common sources of distortion in latent prints.) “Because of these factors, latent fingerprints are not perfect reproductions of the friction skin, even over a small area.” OIG Report at 104. Moreover, latent prints are typically fractions of a full print from a single finger or thumb – the average size of a latent fingerprint fragment is only one-fifth the size of a full fingerprint. *Id.* at 99 n.58.

If the examiner decides there is “enough” to make a comparison, he then continues with the analysis by visually inspecting the appearance of the print. Examiners describe the characteristics of fingerprints by referring to three “levels” of detail. “Level 1 detail” refers to

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<sup>28</sup> Bruce Budowle, Pd. D. et al, FBI Laboratory, *A Perspective on Errors, Bias, and Interpretation in the Forensic Sciences and Direction for Continuing Advancement*, 54 J. Forensic Science 798, 805 (July 2009) (“there is no guarantee that all scientists (or the vast majority) agree or recognize what is a sufficient amount of information to determine that the examinations are complete and appropriate . . . .”).

<sup>29</sup> “John Nielson served as a certified latent print examiner from 1981-1998 and is currently a forensic scientist supervisor with the Wisconsin State Crime Lab.” *Id.* at 32 n.1. *The Prosecutor* is published bimonthly by the National District Attorneys Association.

the overall design or pattern of the ridges, known as arches, loops, or whorls.<sup>30</sup> Level 2 details refer to the paths and shapes of the friction ridges,<sup>31</sup> and are described with terms such as “islands,” or “ridge endings” or “branchings,”<sup>32</sup> although “the nomenclature in the literature is not standardized.”<sup>33</sup> Level 3 details are tiny features of the friction ridges, such as the shapes of ridge edges, and the shape and relative location of the pores.<sup>34</sup> There are no standards for what or how many aspects of the fingerprint should be considered, either at Level 1, 2, or 3, and the examiner is not required to record what aspects of the print he thinks are relevant. The examiner makes a subjective decision about what aspects of the print to use when comparing it to the known print.

At the comparison stage the examiner compares the latent print to the known print.

Ashbaugh at 173. There are no standards for what characteristics or features the prints should

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<sup>30</sup> Champod at 17, T.2.1; OIG Report at 98. A suspect can be excluded on the basis of Level 1 details, but Level 1 details are never used as the basis of an identification. Ashbaugh at 95; SWGFAST Guidelines for Friction Ridge Examination Methodology for Latent Print Examiners [hereinafter SWGFAST Guidelines], at 2.1.6., [www.swgfast.org/Friction\\_Ridge\\_Examination\\_Methodology\\_for\\_Latent\\_Print\\_Examiners\\_1.0\\_1.pdf](http://www.swgfast.org/Friction_Ridge_Examination_Methodology_for_Latent_Print_Examiners_1.0_1.pdf).

<sup>31</sup> OIG Report at 98. Level 2 details are also known as “minutiae,” “points of identification,” and “Galton characteristics.” Champod at 17, T.2.1.

<sup>32</sup> Ashbaugh at 139-41 (describing dots, islands, short ridges, ridge endings, bifurcation, enclosures, spur, crossover, trifurcation, and overlaps); *id.* at 140 (“While some authors list several ridge characteristics, they all break down to islands and branches.”); Champod at 17, T.2.1 (stating that “[b]asic forms are ridge endings, bifurcations, and dots”).

<sup>33</sup> Champod at 17, T.2.1. As one latent print examiner explained: “if you read more than one [fingerprint text], you risk complete confusion because the terminology is not all the same and the methods used to make an identification are not all the same.” Sandra Wiese, *From Galton Points to ACE-V: One Examiner’s Journey, An Editorial Perspective Disguised as a Research Paper*, [www.clpex.com/Articles/FromGaltonPointstoACEV.doc](http://www.clpex.com/Articles/FromGaltonPointstoACEV.doc) (citing J. Cowger, *FRICTION RIDGE SKIN: COMPARISON AND IDENTIFICATION OF FINGERPRINTS*, 143 (Elsevier Science 1983) (“The terms used to describe these characteristics vary markedly among writers in the field and differ even among examiners.”)).

<sup>34</sup> OIG Report at 99; Ashbaugh at 96; Champod at 17, T.2.1.

have in common, 2009 NRC Report at 139, and the examiner is not required to record what he considers to be the similarities or differences between the prints. There are also no standards that dictate a comparison be conducted at a particular scale. OIG Report at 108.

At the evaluation stage the examiner makes a subjective decision about whether the prints are similar enough to be declared a “match.” Ashbaugh at 173-74. If the examiner determines in his subjective opinion that the prints do not match, it is classified as an “exclusion.”<sup>35</sup> If he determines in his subjective opinion that the prints do match, it is classified as an “identification” or “individualization.”<sup>36</sup> Fingerprint examiners explicitly acknowledge that “[t]he opinion of individualization or identification is subjective,” Ashbaugh at 103,<sup>37</sup> and that there are no generally accepted standards in the United States for how similar the prints have to be before a match can be declared.

Other countries have requirements for how many “points” prints should have in common before an examiner can make an identification. The governing bodies of U.S. fingerprint examiners (the IAI and SWGFAST) have rejected a point standard, however, because of the absence of any “valid basis for requiring a predetermined minimum number of friction ridge characteristics that must be present in two impressions in order to establish positive

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<sup>35</sup> SWGFAST defines “exclusion” as “The determination that two areas of friction ridge impressions did not originate from the same source (non-identification).” SWGFAST Glossary at 9.

<sup>36</sup> SWGFAST defines “individualization” as “The determination that corresponding areas of friction ridge impressions originated from the same source to the exclusion of all others.” SWGFAST Glossary at 12. “Identification” is defined as “Individualization.” *Id.* at 11. “If neither an identification nor an exclusion can be reached, the result of the comparison is inconclusive.” 2009 NRC Report at 138.

<sup>37</sup> See also 2009 NRC Report at 101 (“How much friction ridge detail is considered sufficient depends on the capability of the expert of assessing the value of what is present and forming an opinion.”).

identification.” Resolution of the IAI (Aug. 1, 1973).<sup>38</sup> In other words, because there is no valid scientific basis to set the bar for identification at, for example, 20, 10, or 8 points, the IAI and SWGFAST have discarded the point system altogether in favor of a practice where identification is determined by “*the opinion* of the friction ridge identification specialist that there is sufficient uniqueness within those details to eliminate all other possible donors in the world.” Ashbaugh at 103 (emphasis in original). The rejection of the point standard stems— not from evidence that the subjective opinion approach is reliable — but rather from the absence of evidence suggesting the adequacy of any particular point standard.

Although there are no uniform standards governing latent print evaluation, forensic examiners ostensibly maintain a “one discrepancy rule,” pursuant to which, “[i]n theory, one significant dissimilarity is enough for the examiner to declare an exclusion.” Champod at 22.<sup>39</sup> However, “[s]mall discrepancies appear in all prints.” Ashbaugh at 146. Thus “[i]n practice, the difficulty lies at defining what a significant difference is.” Champod at 22-23. The decision about whether a discrepancy between two prints is an acceptable distortion that does not implicate the “one discrepancy rule,” or whether it is a difference that requires exclusion is a subjective one, and there are “no criteria . . . for adopting an explanation.” OIG Report at 112. Fingerprint examiners assert that “[e]xperienced identification specialists have learned through training and practice the limits of how much distortion or difference is still considered within the parameters of agreement.” Ashbaugh at 146. As discussed *infra*, however, “[a] criticism of the

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<sup>38</sup> See also SWGFAST Standards for Conclusions at 1.2.1 (“There is no scientific basis for requiring that a predetermined number of corresponding friction ridge details be present in two impressions in order to effect individualization.”); Champod at 29.

<sup>39</sup> SWGFAST Standards for Conclusions at 2.2.1 (“The presence of one discrepancy is sufficient to exclude.”).

latent print community is that the examiners can too easily explain a 'difference' as an 'acceptable distortion' in order to make an identification." 2009 NRC Report at 145.

In the final stage of the ACE-V process, verification, if the examiner has identified a match, he gives the latent and known prints to another examiner in the lab and asks the second examiner to agree or disagree with the conclusion the first examiner reached. There are no uniform standards governing the second examiner's analysis, the second examiner simply makes a subjective decision about whether she agrees with the first, and is not required to record why she has verified the original decision. The second examiner is also aware of the conclusion the first examiner has reached; there is often no attempt to "blind" the verifying examiner to the original decision. 4 Mod. Sci. Evid. § 32:32 ("Usually a second examiner will know the result of the first examination . . . ."); OIG Report at 115. In fact, the verifying examiner sometimes consults with the original examiner when conducting the verification. OIG Report at 115.

Once the decision that the prints match has been "verified," the examiner will testify in court that he has identified an absolute match. Fingerprint examiners are professionally prohibited from expressing a fingerprint match in terms of a probability. They are thus never "85% sure" or "99% certain" that the defendant is the source of the latent print. A fingerprint examiner always represents that the match is absolute and that the individual has been identified as a source of the print to the exclusion of all others. "Testimony as to possible or probable identifications are grounds for disciplinary measures against members by sanctioning organizations. Unless clearly elicited by the examining attorney and well qualified during testimony, such statements transgress the bounds of ethical conduct." Nielson at 37 n.12 (citing "Resolution VII Amended," 30 Identification News 8 (August 1980)); *see also* SGWFAST Press Kit at 12.2 ("Statements of possible, probable, or likely fingerprint conclusions are speculative,

unscientific, inappropriate, and misleading.”<sup>40</sup> As explained above, “[t]he conclusion of certainty derives from the examiner’s **personal conviction** that the chance of a match between the crime mark [latent print] and any other person other than X is so small that it can be ignored.” Champod at 33 (emphasis added).<sup>41</sup>

B. THE SCIENTIFIC COMMUNITY DOES NOT GENERALLY ACCEPT THAT LATENT PRINT ANALYSIS CAN CONSISTENTLY, AND WITH A HIGH DEGREE OF CERTAINTY, DEMONSTRATE A CONNECTION BETWEEN A LATENT PRINT AND A PARTICULAR PERSON

The relevant scientific community does not generally accept that latent fingerprint analysis can consistently and accurately identify a specific person as the exclusive source of a latent print because the community recognizes that (1) a valid scientific basis for latent fingerprint identification has never been demonstrated; (2) the discipline’s claim of infallibility is demonstrably false; (3) the significance or weight that should be attributed to an “identification” is unknown because it is not known how often portions of fingerprints are sufficiently similar to one another to be misattributed; and (4) latent fingerprint examination is a subjective analysis conducted without standards or controls for bias.

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<sup>40</sup> See [www.swgfast.org/swgfast\\_press\\_kit\\_may04.html](http://www.swgfast.org/swgfast_press_kit_may04.html); see also IAI position concerning Latent Fingerprint Identification, at 2-3 (Nov. 29, 2007) (“Fingerprint examiners . . . are ethically and professionally required to offer their opinions only when they are absolutely confident of their conclusions . . .”), [www.onin.com/fp/IAI\\_Position\\_Statement\\_11-29-07.pdf](http://www.onin.com/fp/IAI_Position_Statement_11-29-07.pdf); Champod at 33 (“The present state of affairs, then, is that fingerprint experts have taken the position not to report opinions in terms of probabilities.”); OIG Report at 111 (consistent with SWGFAST guideline, FBI examiners “only express a conclusion of individualization in terms of absolute certainty, with a zero likelihood that the latent fingerprint was made by a different person”).

<sup>41</sup> After the 2009 NRC report was released the IAI published a statement on its website that “Although the IAI does not, at this time, endorse the use of probabilistic models when stating conclusions of identification, members are advised to avoid stating their conclusions in absolute terms when dealing with population issues.” Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), *supra* note 6. The rules prohibiting testimony in the form of anything less than absolute certainty remain in effect, however, and the IAI’s statement makes clear that it still does not endorse probability statements.

1. **The relevant scientific community recognizes that a valid scientific basis for latent fingerprint identification has never been demonstrated.**

Even before the 2009 NRC Report was released, the relevant scientific community had raised the alarm regarding the lack of scientific evidence validating latent fingerprint identification. As the 2005-2006 Edition of *Modern Scientific Evidence* observed: “Many of the most basic claims of fingerprint identification have never been tested empirically, and the field’s most thoughtful research and scholarship have concluded that, in the strong form in which they usually are presented, those claims in fact are unprovable.” 4 *Mod. Sci. Evid.* § 32:1. Indeed, a host of legal and scientific scholars, as well as some forensic examiners, have criticized the absence of any evidence validating latent fingerprint identification and the ACE-V method.

Criticism of the fact that “surprisingly little conventional science exists to support the claims of the fingerprint examination community,” 4 *Mod. Sci. Evid.* § 32:1, has come from every corner of the relevant scientific community, including experts in scientific evidence, scientists, statisticians, legal and other scholars, and even forensic scientists and fingerprint examiners. In all, **at least 31 different representatives** of the relevant scientific community had acknowledged or criticized the dearth of evidence validating latent fingerprint identification – even before the 2009 NRC Report was released. The list of the members of the relevant scientific community and their criticism of the absence of scientific evidence supporting latent print identification is attached at Appendix F.

The 2009 NRC Report is the most recent and definitive declaration from the scientific community regarding fingerprint analysis and it echoed the conclusions of the scholars and scientists referenced above. (The relevant sections of the Report are attached as Appendix G). The NRC concluded that latent fingerprint analysis, like many other types of forensic evidence, “has not been “rigorously shown to have the capacity to consistently, and with a high degree of

certainty, **demonstrate a connection between evidence and a specific individual or source.**”

NRC Report at 7 (emphasis added). The Honorable Harry T. Edwards, co-chair of the 2009

NRC Report Committee, highlighted “the paucity of scientific studies addressing the accuracy of fingerprint analyses” in his keynote address at a recent conference:

One of the most telling moments for me during the committee’s hearings occurred when I heard the testimony of an expert fingerprint analyst who is a member of the Scientific Working Group on Friction Ridge Analysis, Study and Technology [SWGFAST]. At one point in his testimony, he was asked about the scientific basis for determining a match in prints in a situation when the examiner has only a smudged or partial print. The expert did not hesitate in conceding that the research had yet to be done.<sup>42</sup>

As the NRC recognized, “ACE-V provides a broadly stated framework for conducting friction ridge analysis. However, this framework is not specific enough to qualify as a validated method for this type of analysis.” *Id.* at 142. The NRC explained:

ACE-V does not guard against bias; is too broad to ensure repeatability and transparency; and does not guarantee that two analysts following it will obtain the same results. For these reasons, merely following the steps of ACE-V does not imply that one is proceeding in a scientific manner or producing reliable results. A recent paper by Haber and Haber presents a thorough analysis of the ACE-V method and its scientific validity. Their conclusion is unambiguous: “We have reviewed available scientific evidence of the validity of the ACE-V method and found none.”

*Id.* at 142-43. The relevant scientific community has made clear, both in scholarly articles and as reflected in the 2009 NRC Report, that it does not generally accept that latent fingerprint identification is a valid method that can reliably connect a latent print to a specific person to the exclusion of all others.

Latent print identification can only be validated through an appropriate scientific study. A century of adversarial litigation is not a substitute for validation; as Judge Harry T. Edwards observed, “the adversarial approach to the submission of evidence in court is not well suited to

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<sup>42</sup> Edwards Keynote at 3, *supra* note 6.

the task of finding ‘scientific truth.’”<sup>43</sup> As the 2009 NRC Report explains: “To confirm the validity of a method or process for a particular purpose (e.g., for a forensic investigation), **validation studies must be performed.**” 2009 NRC Report at 113 (emphasis added).

Validation studies “begin with a clear hypothesis (e.g. ‘[fingerprinting] can reliably associate [a fingerprint] with its source’). *Id.* An unbiased experiment is then conducted “to provide useful data about the hypothesis” which is collected “under well-specified and controlled conditions.”

*Id.*<sup>44</sup> A validation study, in other words, would measure the rate at which latent print examiners achieve accurate results. Ironically, it is in part because fingerprint evidence has been admitted for so long that there has been no incentive for studies testing whether the method is actually valid.<sup>45</sup> As one former prosecutor pointed out, however, “[r]egardless of the reason for not conducting the supporting research for fingerprint identification, the lack of empirical study and testing of the processes is a glaring lacuna in the overall methodology of forensic ‘science.’”

Tamara Lawson, *Can Fingerprints Lie?: Re-weighing Fingerprint Evidence in Criminal Jury Trials*, 31 Am. J. Crim. L. 1, 33, 66 (Fall 2003).

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<sup>43</sup> Edwards Keynote at 6, *supra* note 6; *see also* Budowle, FBI Laboratory, 54 J. Forensic Science at 799 (“we do not advocate successful admissibility as demonstrating good science”); *Crisp*, 324 F.3d at 272-73 (Michael, J., dissenting) (“Nor is fingerprint . . . analysis necessarily reliable because it has been subjected to the adversarial process of litigation.”); Michael J. Saks et al., *Merlin and Solomon: Lessons from the Law's Formative Encounters with Forensic Identification Science*, 49 Hastings L. J. 1069, 1102 n.169 (1998) (“The allusion to ‘thousands of cases without error’ begs the question of validity. In actual disputed cases it rarely, if ever, is possible to tell whether the identification was correct or not; that is why the issue was before the fact finder.”).

<sup>44</sup> Moreover, “[a] critical step in such validation studies is their publication in peer reviewed journals, so that experts in the field can review, question, and check the repeatability of the results.” *Id.* at 114.

<sup>45</sup> Ashbaugh at 4 (“Legal counsel shied away from dwelling on a science that was considered exact and infallible, a belief that was difficult to dispel without adequate and structured literature being available.”).

In its responses to the NRC's critique, the IAI, the professional association for print examiners, did not dispute the absence of validation studies. Instead it asserted that:

The IAI has, for many years, sought support for research that would scientifically validate many of the comparative analyses conducted by its member practitioners. While there is a great deal of empirical evidence to support these exams, **independent validation has been lacking.** Daubert and Frye hearings of recent years have focused on the lack of scientific validation in a number of these forensic disciplines. Unfortunately, although some funds have been made available, definitive research has been elusive.

Letter from IAI President Robert J. Garrett to The Honorable Patrick J. Leahy, at 2 (March 18, 2009) (emphasis added).<sup>46</sup> SWGFAST's response to the NRC was less explicit, but similarly failed to refute the absence of validation studies: "It is the position of SWGFAST that more than a century of research exists in the discipline of friction ridge analysis including studies in biology, physiology, histology, embryology, physics, genetics, statistics, mathematics and computer science."<sup>47</sup> Even assuming these sources (for which no citations were provided) can demonstrate something useful about fingerprint evidence, it is undisputed that they cannot demonstrate the **validity** of latent fingerprint identification. And it is the absence of such validation evidence that has been decried by the relevant scientific community.

The IAI also issued the notable statement that:

we would like to point out the following statement in regards to fingerprint analysis contained on page [142] [of the 2009 NRC Report]: "it seems plausible that a careful comparison of two impressions can accurately discern whether or not they had a common source." Therefore we submit that the fingerprint examinations conducted and continuing to be conducted across this country are reliable when conducted by individuals, trained to competency, using scientific and professionally accepted practices and procedures following accepted standards.

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<sup>46</sup> See [www.theiai.org/current\\_affairs/nas\\_response\\_leahy\\_20090318.pdf](http://www.theiai.org/current_affairs/nas_response_leahy_20090318.pdf).

<sup>47</sup> SWGFAST Position Statement Regarding NAS Report (Aug. 3, 2009), [www.swgfast.org/SWGFAST\\_Position\\_Statement\\_NAS\\_2009\\_08\\_03.pdf](http://www.swgfast.org/SWGFAST_Position_Statement_NAS_2009_08_03.pdf).

Garrett Letter at 2. But plausibility is where science starts, not where it ends. If latent fingerprint identification “seems plausible” that means only that it is a promising candidate for scientific study. It does not mean that in the absence of such study it should be admitted into the courtroom and relied upon by a fact finder in a criminal case. Indeed, the fact that the NRC could say only that latent print identification “seems plausible” is the best evidence that the scientific community does not at this time generally accept the discipline’s ability to “accurately discern” whether a known print and a latent print come from the same person.<sup>48</sup>

2. **The relevant scientific community recognizes that the claim that latent fingerprint identification is infallible is scientifically implausible and demonstrably false.**

Because there are no validation studies testing whether latent fingerprint comparisons produce valid and reliable results, there is accordingly no evidence of how often latent fingerprint comparisons are erroneous. Practitioners have consistently claimed that the answer is “never” – that the discipline is infallible and has an error rate of zero. For example, the FBI publication, *THE SCIENCE OF FINGERPRINTS: CLASSIFICATION AND USES*, describes fingerprinting as “infallible.” *Id.* at iv.<sup>49</sup> Courts have found the “zero error rate” very persuasive, and have relied on it when admitting a print examiner’s testimony despite other concerns about the

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<sup>48</sup> Under the *Frye* standard, the scientific community arguably cannot generally accept a technique that has not been tested. *See, e.g., Downing*, 753 F.2d at 1237 n.14 (“Implicit in the *Frye* approach . . . is the assumption that extensive testing of the technique will occur within the relevant scientific community.”); *Brim v. State*, 695 So. 2d 268, 272 (Fla. 1997) (“Th[e] *Frye* standard requires a determination, by the judge, that the basic underlying principles of scientific evidence have been sufficiently tested and accepted by the relevant scientific community.”).

<sup>49</sup> *See* [www.gutenberg.org/files/19022/19022-8.txt](http://www.gutenberg.org/files/19022/19022-8.txt). This publication is one of the four texts suggested by the IAI as recommended reading for preparing for the IAI certification test. *See also* OIG Report at 124 (“Some examiners have testified in court that the error rate for the ACE-V methodology, properly applied, is zero or nearly zero, and several examiners interviewed by the OIG made the same assertion.”) (citation omitted).

reliability of latent print identification.<sup>50</sup> The relevant scientific community, however, has recognized that the discipline's claim of infallibility is demonstrably false. The 2009 NRC Report made clear: "Although there is limited information about the accuracy and reliability of friction ridge analysis, claims that these analyses have zero error rates are **not scientifically plausible**." 2009 NRC Report at 142 (emphasis added).<sup>51</sup> As Judge Edwards observed, "[t]here is no such concept as a zero error rate in good scientific analysis."<sup>52</sup> Moreover, well documented erroneous fingerprint identifications have eviscerated "the misconception that the forensic discipline of fingerprinting is infallible." 2009 NRC Report at 103-04.

It clear that the error rate for late print identifications cannot plausibly be zero, but there is no evidence demonstrating the actual error rate. As scientists cited in the 2009 NRC Report concluded:

Our careful search of all of the professional research literature turned up not a single experiment on examiner accuracy, either when comparing latent prints to AFIS outputs [prints from the AFIS computer system] or when comparing latent prints to ten prints [inked prints of all ten fingers taken from known individuals]. Such data simply do not exist, even though examiners have testified in court about their infallible accuracy in making fingerprint comparisons for almost 100 years.

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<sup>50</sup> See, e.g., *United States v. Llera Plaza*, 188 F. Supp. 2d 549, 566 (E.D. Pa. 2002) ("[The FBI examiner] knew of no erroneous identifications attributable to FBI examiners . . . [and i]t has been open to defense counsel to present examples of erroneous identifications attributable to FBI examiners, and no such examples have been forthcoming. I conclude, therefore, on the basis of the limited information in the record as expanded, that there is no evidence that the error rate of FBI examiners is unacceptably high.").

<sup>51</sup> After the 2009 NRC report was released, the IAI published a statement on its website that "[i]t is suggested that members not assert 100% infallibility (zero error rate) when addressing the reliability of fingerprint comparisons." Memorandum to IAI members from President Robert J. Garrett (Feb. 19, 2009), *supra* note 6. It is not clear whether the IAI has actually rejected the zero error rate premise, or whether it is suggesting that, as a matter of strategy, members should not make that claim. The IAI update did not acknowledge that the error rate for latent print identification is unknown. Publication of the 2009 NRC Report also caused SWGFAST to "acknowledge[] . . . that claims of zero error rate in the discipline are not scientifically plausible."

<sup>52</sup> Edwards Keynote at 3, *supra* note 6.

Lyn Haber & Ralph Norman Haber, *Error Rates for Human Latent Fingerprint Examiners*, in AUTOMATIC FINGERPRINT RECOGNITION SYSTEMS 339, 358 (Nalini K. Ratha & Ruud Bolle eds., 2004).<sup>53</sup> Yet “[w]ithout information about error rates, the initial factfinder, this Court, and the ultimate one, the jury, have no accurate way of evaluating the testimony.” *United States v. Green*, 405 F. Supp. 2d 104, 121 (D.Mass. 2005); *see also* Jonathan J. Koehler, *Fingerprint Error Rates and Proficiency Tests: What They Are and Why They Matter*, 59 Hastings L. J. 1077, 1098 (May 2008) (“[t]he reliability and probative value of a reported fingerprint match is inextricably linked to the rate at which fingerprint examiners make errors.”). When the jury hears that a print examiner has made a “match” absent error rate data, the jury has no way to determine how much weight to give that testimony. “In effect, the jury would have to trust in [the examiner’s] observational capacities, without knowing how often he was actually correct.” *Green*, 405 F. Supp. 2d at 122.<sup>54</sup>

Although it is unknown how often latent print analysis is wrong, it is undisputed that erroneous latent print identifications have been made. And while the Brandon Mayfield case is not the sole example of latent fingerprint identification’s capacity to produce an erroneous

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<sup>53</sup> *See* 2009 NRC Report at 138-39, 142-43 (citing research conducted by Lyn Haber & Ralph Haber); *see also* Begley, S., *Despite Its Reputation, Fingerprint Evidence Isn’t Really Infallible*, *The Wall Street Journal*, Jun. 4, 2004, at B1 (“[S]cientific evidence must . . . have a known error rate and standards. Fingerprints don’t. It’s time to admit this emperor is naked.”); Mnookin, 67 Brook. L. Rev. at 59 (“In the case of fingerprinting, the general rate of error is simply not known. . . .”); Sandy L. Zabell, Ph.D., *Fingerprint Evidence*, 13 J.L. & Pol’y 143, 178 (2005) (“we have no true idea of the underlying error rate”); Michael Mears & Therese M. Day, *The Challenge of Fingerprint Comparison Opinions in the Defense of a Criminally Charged Client*, 19 Ga. St. U. L. Rev. 705, 728-29 (2003) (“There is no known error rate for latent fingerprint examiners.”).

<sup>54</sup> *See also* Lyn Haber & Ralph Haber, *Scientific Validation of Fingerprint Evidence under Daubert*, 7 Law, Probability & Risk 87, 92 (2008) (“the published error rate information informs the court of the amount of confidence that can be placed in a conclusion”); Koehler, 59 Hastings L.J. at 1079 (“Without information about error rates, fact finders have an insufficient basis for assessing the examiner’s reliability and assigning weight to his opinion.”).

identification, it is one of the most powerful and thoroughly documented. Following the March 11, 2004 terrorist bombing of a number of trains in Madrid, Spain, the Spanish National Police sought the FBI's assistance in identifying a latent fingerprint from a plastic bag found on the scene that contained remnants of explosives. OIG Report at 1, 29. Using the computerized fingerprint system (AFIS),<sup>55</sup> the FBI generated 20 possible candidates for the prints, one of whom was Brandon Mayfield. *Id.* at 31. "Following a detailed comparison of [the latent print] and Mayfield's known fingerprint, the [FBI] examiner concluded that Mayfield was the source of the [the latent print]." *Id.* at 1. The 100% identification was verified by "a Fingerprint Examiner . . . who is a retired FBI fingerprint examiner with over 30 years of experience" and by "[a] Supervisory Fingerprint Specialist" who is one of the three chiefs of the FBI's Latent Fingerprint Unit. *Id.* at 64. On the basis of the fingerprint identification, Mayfield was arrested on May 6, 2004. *Id.* at 67. The identification was subsequently verified again by a court-appointed expert selected by the defense who was "certified as a latent print examiner by the IAI," had over 30 years experience, and had "received numerous honors and awards." *Id.* at 80. Then on May 19, the Spanish Police "informed the FBI that it had positively identified [the latent print] as the fingerprint of a different person, an Algerian national named Ouhane Daoud." *Id.* at 3. On May 24, after reviewing Daoud's prints, the government announced that the FBI had erred in its identification. *Id.* at 3, 88. On July 16, the FBI issued a formal report identifying Daoud as the source of the latent print. *Id.* at 4.

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<sup>55</sup> See description of AFIS, *supra* note 26.

As a result of these events, the Office of the Inspector General (OIG) initiated a comprehensive investigation<sup>56</sup> “to determine the causes of the fingerprint misidentification” in the Mayfield case. *Id.*<sup>57</sup> In addition to demonstrating that latent print identification can be simply – and completely – wrong, the OIG Report on the Mayfield case substantiated several critiques of the scientific community and revealed problems with the reliability of **any** latent print identification.

Fingerprints from different people can be very similar to one another: The Mayfield case demonstrates that even if every full fingerprint is unique, fragments of prints can still be strikingly similar. According to the OIG, “a major factor in the misidentification” was “[t]he unusual similarity between [the latent print] and Mayfield’s known fingerprint. *Id.* at 6. Specifically, there were ten features, or “points” in the latent print that “were at least generally consistent with features in the known prints for both Mayfield and Daoud.” *Id.* at 130. Mayfield and Daoud did not have identical fingerprints, *id.* at 131, but “the unusual similarity in position and ridge counts was a critical factor that misled four examiners and contributed to their overlooking other important differences between [the latent print] and Mayfield’s fingerprint.”

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<sup>56</sup> The OIG interviewed over 70 individuals, OIG Report at 22, reviewed thousands of pages of documents, *id.* at 23, and received input and guidance from “recognized experts in latent fingerprint identification.” *Id.* at 24.

<sup>57</sup> The OIG report constitutes an admission of a party opponent. “The courts have . . . stated on more than one occasion that reports or writings published by a governmental agency constitute admissions of the government under [the federal rules of evidence].” *Penguin Books U.S.A., Inc. v. New Christian Church of Full Endeavor, Ltd.*, 262 F. Supp. 2d 251, 261 (S.D.N.Y. 2003). *See United States v. Van Griffin*, 874 F.2d 634, 638 (9th Cir. 1989) (holding that a manual on field sobriety testing issued by the government should be admissible as an admission of a party opponent in a drunk driving case); *Garland v. State*, 834 So.2d 265, 267 (Fla. Dist. Ct. App. 2002) (holding that a forensics report was admissible against the government as party admission); *Gess v. United States*, 952 F. Supp. 1529, 1534 n.8 (M.D. Ala. 1996) (finding report prepared by Air Force Office of Special Investigations admissible against government under Rule 801(d)(2) in FTCA action by Air Force hospital patients); *see also Harris v. United States*, 834 A.2d 106, 120 (D.C. 2003) (“The language of the party admission rule provides no basis for creating . . . an exception where the government is the party opponent.”).

*Id.* at 7; *see also* 2009 NRC Report at 46. Specifically, it was not distortions in the print that misled the examiners, but the true “close similarities” between the two prints. OIG Report at 131. The similarities between the two prints in the Mayfield case illustrates the exact problem the scientific community has highlighted when challenging the reliability of latent print identification – even if **full** fingerprints are unique, **partial** latent prints from two different people might have patterns similar enough that an impression from one could be mistakenly attributed to the other. Because “multiple people may have a certain number of ridge characteristics in common, . . . the axiom that ‘no two fingerprints are alike’ is defied in practice.”<sup>58</sup>

The OIG described the degree of similarity between Mayfield and Daoud’s prints as “unusual” based on “anecdotal reports suggest[ing] that this degree of similarity between prints from two different people is an extremely unusual circumstance.” *Id.* at 7; *see also id.* at 136. Yet the OIG acknowledged that it “found no systemic study of the rarity of such an event.” *Id.* at 7. (As explained in Part II(B)(3), *infra*, no such studies exist.). The OIG thus found that the similarity between the prints of two different people was one of the primary causes of the misidentification and it admitted that it found no evidence – other than anecdotes – describing just how prevalent such similarities are in the population.

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<sup>58</sup> Jessica D. Gabel & Margaret D. Wilkinson, “Good” Science Gone Bad: How the Criminal Justice System Can Redress the Impact of Flawed Forensics, 59 Hastings L.J. 1001, 1012 (May, 2008); *see also* Bruce Budowle, JoAnn Buscaglia, Rebecca Perlman, *Review of the Scientific Basis for Friction Ridge Comparisons as a Means of Identification: Committee Findings and Recommendations*, FBI Laboratory, at 3 (Jan. 2006) (“The uniqueness issue of interest is not that a fingerprint **in its entirety** is unique . . . . The critical issue is the minimum number of objective features in a latent print necessary to render an identification with confidence.”) (emphasis added); Champod at 35 (“The crux of the matter is . . . the ability of the examiner to recognize sufficient information for the disclosure of identity from a small, distorted latent fingerprint fragment that may reveal only limited information in terms of quantity or quality.”); 2009 NRC Report at 8 (“the true value of the evidence is determined by the quality of the latent fingerprint evidence.”).

“Verification” does not prevent erroneous identifications: The Mayfield case also illustrates that the Verification stage of the ACE-V method is not a sufficient safeguard against erroneous identifications. The incorrect latent print identification of Mayfield was confirmed three times: first in an official verification by an experienced FBI examiner, then pursuant to a review by one of the three chiefs of the FBI Latent Prints Unit, and then again by a court-appointed expert examiner. *Id.* at 175-76. The OIG reported that the information it reviewed “raises the possibility that the existing verification procedures may provide insufficient assurance that complete, independent, and unbiased second examinations are conducted in connection with every identification.” *Id.* at 176; *see also id.* at 177 (noting that the absence of disagreement between examiners over time may “reflect that the verification phase of ACE-V is not serving as a significant screen”). The inability of the verification stage to prevent erroneous identifications has likewise been emphasized in critiques by the scientific community.<sup>59</sup>

The OIG Report suggested that the verification process is ineffective at spotting incorrect identifications because “verifiers are made aware that an identification has already been made by a prior FBI examiner . . . contributing to the expectation that the second examiner will concur with his colleague.” *Id.* at 175. The OIG could not “definitively state” that the verification procedure was a source of the Mayfield error, but concluded that the verification procedure creates the “potential for other erroneous identifications.” *Id.* at 10.

The “one discrepancy rule” does not prevent erroneous identifications: The OIG recognized that “the FBI and other forensic laboratories utilize a ‘one discrepancy rule’ in which a single difference in appearance that cannot be explained must preclude the examiner from

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<sup>59</sup> *See, e.g.,* Haber & Haber, 7 Law, Probability & Risk at 97 (“most verification testing in crime laboratories is non-blind, which permits contamination and bias to reduce the chances of detecting errors”).

declaring an identification.” *Id.* at 154. However, the rule did not preclude the erroneous identification in the Mayfield case, because the examiners explained away every difference in appearance between Mayfield’s print and the latent print. *Id.* at 164-65. Upon review, the OIG concluded that “[a]lthough the explanations the examiners gave for each difference were individually plausible, they cumulatively required too many rationalizations to support an identification with the requisite certainty.” *Id.* at 9.<sup>60</sup> Ultimately, the OIG concluded that the FBI’s application of the “one discrepancy rule” was not stringent enough to prevent the erroneous identification of Mayfield. *Id.* The case thus illustrates “[a] criticism of the latent print community . . . that the examiners can too easily explain a ‘difference’ as an ‘acceptable distortion’ in order to make an identification.” 2009 NRC Report at 145.

Even the most qualified latent print examiners make erroneous identifications: It is undisputed that the latent print examiners who erroneously identified Mayfield as the source of the latent print were experts in the field. The first examiner, who made the original identification, was a supervisor in the FBI’s latent print unit, and the identification was verified by a retired FBI fingerprint examiner with over 30 years of experience who had been selected “to act as the verifier because of [his] extensive experience and skill.” *Id.* at 30, 32-33. The verification was then confirmed by a Supervisory Fingerprint Specialist who was one of the three chiefs of the FBI’s Latent Print Unit. In short, the examiners in the Mayfield case were some of the best and most experienced latent print examiners in the country. And all of them were wrong. Similarly, the scientific community has pointed out that many of the documented

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<sup>60</sup> There were also differences in Level 3 details that were not “treated as important enough to require explanation” and “were apparently attributed to the variability in appearance that occurs in any transfer” of a latent print. OIG Report at 153. The OIG criticized this approach as “selective ‘cherry-picking’ of only those Level 3 details that seemed to support the identification, while dismissing all Level 3 differences elsewhere in the print.” *Id.*

erroneous identifications were committed by IAI certified examiners. *See, e.g.,* Simon A. Cole, *More Than Zero: Accounting for Error in Latent Fingerprint Identification*, 95 J. Crim. L. & Criminology 985, 1024 (Spring 2005) (“nearly one-third (7/22) of the total number of American examiners implicated in disputed identifications after IAI certification was instituted in 1977 were IAI-certified”) (footnotes omitted).<sup>61</sup> The Mayfield case thus disproves the common claim by latent print examiners that, notwithstanding the evidence of errors by others, their own experience makes their identifications reliable.

Access to a defense expert does not prevent erroneous identifications: The identification in the Mayfield case was confirmed by a court-appointed expert selected by the defense, Kenneth Moses. Moses has over 30 years of latent print examination experience; is IAI certified; is a member of SWGFAST; has testified before courts and arbitrators over 800 times; and has “received numerous honors and awards.” *Id.* at 80.<sup>62</sup> Moses’ confirmation of the identification of Mayfield demonstrates that analysis by even an exceptionally qualified defense expert is an insufficient safeguard against erroneous identifications.

Complying with the discipline’s best practices guidelines does not prevent erroneous identifications: The OIG also concluded that “the examiners were able to make all of the decisions that contributed to the erroneous identification **without violating any specific provision of the applicable [FBI Latent Print Unit] or SWGFAST standards.**” OIG Report at 198 (emphasis added). Although the examiners certainly made errors, “the steps taken by the examiners in [the Mayfield] case did not specifically contravene any criterion, recommendation,

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<sup>61</sup> *See also* Simon A. Cole, *The Prevalence and Potential Causes of Wrongful Conviction by Fingerprint Evidence*, 37 Golden Gate U. L. Rev. 39, 86 (Fall 2006) (citing case where erroneous latent print identification was attested to by two IAI-certified examiners; one of whom was the author of a textbook on fingerprint identification).

<sup>62</sup> *See also* [www.jurispro.com/KennethMoses](http://www.jurispro.com/KennethMoses).

method, or prohibition set forth” in the FBI or SWGFAST standards. *Id.* The examiners followed all the rules, and complied with the discipline’s recommended best practices as set out in the SWGFAST guidelines, and they **still** made an erroneous identification. Again, the absence of meaningful standards to govern the stages of the latent print identification process has been the subject of extensive criticism from the scientific community. *See, e.g.,* Henry C. Lee and R.E. Gaensslen, Eds., *ADVANCES IN FINGERPRINT TECHNOLOGY*, at 329 (CRC Press, 2d Ed. 2001) (“Any unbiased, intelligent assessment of fingerprint identification practices today reveals that there are, in reality, no standards.”).<sup>63</sup>

The absence of objective, validated standards for identifying a “match” can contribute to an erroneous identification but would not have prevented the Mayfield misidentification: The OIG considered whether the Mayfield misidentification could have been prevented if the FBI examiners used a fingerprint analysis standard that required a predetermined number of characteristics in common, rather than the qualitative approach used by the FBI. *Id.* at 10. The OIG concluded – in light of the other problems listed above – that the erroneous identification would have occurred under either method, but determined that “more objectively defined criteria for declaring an identification could help prevent future misidentifications.” *Id.* at 174. Specifically, the OIG believed that “the absence of any further objective definition or guidelines for determining sufficiency, in terms of both quantity and quality, heightens the danger that an examiner will be unduly swayed by an initial or ‘gut’ reaction, or will fail to factor in an adequate margin of safety in a close case.” *Id.* at 174-75. As there is currently no scientific basis for any **objective, validated** standard, the danger of erroneous identifications remains real. The absence of validated standards to cabin the subjective “identification” decision of examiners has

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<sup>63</sup> This publication is one of the four texts suggested by the IAI as recommended reading for preparing for the IAI certification test.

been recognized by the scientific community as a major flaw in latent print identification. *See, e.g.,* Michael Mears & Therese M. Day, *The Challenge of Fingerprint Comparison Opinions in the Defense of a Criminally Charged Client*, 19 Ga. St. U. L. Rev. 705, 736 (2003) (“The absence of standards is most glaring with respect to the ultimate question that should be asked of all fingerprint comparisons: what constitutes a sufficient basis to make a positive identification?”) (footnote omitted).

“The Mayfield case and the resulting report from the Inspector General surely signal caution against simple, and unverified, assumptions about the reliability of fingerprint evidence.” 2009 NRC Report at 3-16. Moreover, while the error in the Mayfield case has received the most governmental scrutiny, it was certainly not the first time latent print analysis has produced an erroneous identification.<sup>64</sup> **There are at least 36 additional documented examples of erroneous conclusions by latent print examiners**, as well as at least 13 other documented examples of crucial errors in the latent print analysis process that demonstrate the unreliability of latent print identifications. Each of the 49 cases is described in Appendix H.

The cases listed in Appendix H likely represent only the tip of the iceberg – because latent print identifications are a form of evidence for which wrongful convictions are least likely

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<sup>64</sup> *See also* Champod, 7 Law, Probability & Risk at 112 (“Cases of false identification are now well-publicized and well-documented.”); OIG Report at 137 (citing representation by fingerprint examiner who served on the IAI Certification Board responsible for investigating complaints of erroneous identifications by IAI-certified examiners, that in his 14-year tenure on the Board “he encountered 25 to 30 erroneous identifications”); *id.* at 124-25 (“other instances of erroneous identifications by non-FBI fingerprint examiners have been reported”); Paul Giannelli and Edward Imwinkelried, 1 SCIENTIFIC EVIDENCE (3d. Ed 1999) § 16-1, p. 740-741, (“both here and abroad there have been alarming disclosures of errors by fingerprint examiners”); *see generally* Jonathan J. Koehler, Ph.D., *A Welcome Exchange on the Status of Fingerprinting*, 7 Law, Probability & Risk 85, 85 (June 2008) (“As for the certainty of fingerprint identifications, the data (not surprisingly) show that fingerprint examiners are fallible. Many commit false-positive and false-negative errors in proficiency tests and in casework.”); James E. Starrs, *Judicial Control Over Scientific Supermen: Fingerprint Experts and Others Who Exceed the Bounds*, 35 Crim. L. Bull. 234 (1999) (“the process of fingerprint identification is not infallible”).

to be exposed. One analysis of 20 cases of fingerprint misidentifications showed that most cases were not exposed through the routine working of the criminal justice process: "In 63% of the cases, extraordinary circumstances were required to expose the fact that misattributions had occurred." Cole, 95 J. Crim. L. & Criminology at 1020. For example, erroneous print identifications have been revealed where the true perpetrator left DNA at the scene by drinking from a cup and discarding clothing containing DNA, *id.* at 1021, when a supposedly identified corpse turned up alive, *id.* at 1013, or, as in the Mayfield case, when there was a competing interpretation of the fingerprint from an international law enforcement agency. *Id.* at 1022. "Most often, there is no independent proof of the accuracy of an examiner's call. Consequently, the absence of large numbers of known errors in fingerprint cases says little about the accuracy of fingerprint match declarations." Koehler, 59 Hastings L. J. at 1087. The fingerprint errors that have been discovered, however, illustrate the unreliability of latent print identifications.

In sum, the relevant scientific community does not generally accept latent print identification in part because of the implausibility of the claim that latent print identification is infallible, the absence of actual error rate data, and the indisputable evidence that erroneous identifications do occur.

**3. The relevant scientific community recognizes that the claim of a fingerprint "match" is meaningless in the absence of probability rate data.**

One of the central lessons of the Mayfield case is that even if no full fingerprints are ever alike, fragments of fingerprints can be similar enough to be indistinguishable to expert print examiners. Indeed, the prints of Mayfield and Daoud had at least ten shared points. There is also evidence that that partial prints from different people have shared up to 16 points in

common.<sup>65</sup> Such similarities raise the question: just how often do partial prints from different people “match”? The relevant scientific community has acknowledged that the answer is unknown.

As one scholar, cited in the 2009 NRC Report, made clear: “Is the chance of two partial prints from different people matching one in a hundred . . . or one in a billion? No fingerprint examiner can honestly answer that question, even though the answer is of course critical to evaluating the probative value of the evidence of a ‘match.’” Mnookin, 67 Brook. L. Rev. at 60-61.<sup>66</sup> There is no database to which fingerprint examiners can turn to tell them how frequently two people might have, for example, 10 print characteristics in common, as “population statistics

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<sup>65</sup> See OIG Report at 136 (citing John Thornton, “Setting Standards In The Comparison and Identification,” (transcript of speech), [www.latent-prints.com/Thornton.htm](http://www.latent-prints.com/Thornton.htm), May 9, 2000 (describing spurious comparison of cropped palm prints with nine points of agreement)); John D. “Dusty” Clark, *ACE-V – Is it Scientifically Reliable and Accurate?*, 52 J. of Forensic Identification 4, 401-408 (2002) (illustrating cropped impressions with eight matching deviations, with some variance in relative location); Y. Mark and D. Attias, *What is the Minimum Standard of Characteristics for Fingerprint Identification?*, 22 Fingerprint Whorld 86 (Oct. 1996) (reporting discovery of non-identical prints with seven matching characteristics)); see also James Osterburg, *The Crime Laboratory: Case Studies of Scientific Criminal Investigation* (1967) (documenting a case where two individual shared ten points of similarity); Ene-Malle Lauritis, *Some Fingerprints Lie*, National Legal Aid Defender Association, The Legal Aid Briefcase, at 129 (Oct. 1968) (describing a case where the latent and known prints shared 14 points of similarity and three dissimilarities); *United States v. Parks*, No. CR-91-358-JSL (Dec. 10, C.D. Cal. 1991) (board certified member of the IAI testified that cases have occurred in which there were ten points of similarity and one point of dissimilarity); Cole, 95 J. Crim. L. & Criminology at 1024 (“Of the twelve cases in the data set for which the number of supposed matching ridge characteristics is known, in fully half of those cases the misattribution was made with at least sixteen points. . . . Three-quarters of the cases had at least fourteen points, and none of the cases involved fewer than eleven points.”); Simon A. Cole, *Grandfathering Evidence: Fingerprint Admissibility Ruling from Jennings to Llera Plaza and Back Again*, 41 Am. Crim. L. Rev. 1189, 1207 (2004) (“During the 1990s, at least three documented misidentifications occurred in Britain where a sixteen-point minimum standard was in effect.”); Mears & Day, 19 Ga. St. U. L. Rev. at 714-15 (“During testimony in a pre-trial hearing challenging the admission of fingerprint comparison evidence, one government expert admitted that he knew of instances where prints from two different people had as many as ten matching characteristics.”).

<sup>66</sup> 2009 NRC Report at 142 n.28 (citing Jennifer Mnookin, *The Validity of Latent Fingerprint Identification*, 7 Law, Probability & Risk 127 (June 2008)).

for fingerprints have not been developed.” 2009 NRC Report at 139. Thus, “[f]ingerprint examiners have no statistical basis for determining the probability that a match really indicates that both prints come from the same human being.” Mnookin, 67 Brook. L. Rev. at 60; *see* OIG Report at 117-18 (“Although the standard purports to permit the examiner to take into account the ‘uniqueness’ of different kinds of friction ridge details, research into the relative frequencies with which different characteristics or combinations of features appear is lacking . . .”).<sup>67</sup> Even the FBI has acknowledged that although “[s]ome probabilistic models have attempted to address the rarity of features in Level II and Level III detail[, m]any of these have not been rigorously tested, or the . . . data are not available for review because this information is proprietary or not well collated.” Bruce Budowle, JoAnn Buscaglia, Rebecca Perlman, *Review of the Scientific Basis for Friction Ridge Comparisons as a Means of Identification: Committee Findings and Recommendations*, FBI Laboratory, at 5 (Jan. 2006).<sup>68</sup>

Because it is unknown how often partial prints can “match,” we cannot know how meaningful – or not – it is that the examiner in this case has concluded that a latent print matches the defendant. As the NRC stated plainly in a previous report, “[t]o say that two patterns match, without providing any scientifically valid estimate (or, at least, an upper bound) of the frequency with which such matches might occur by chance, is **meaningless**.” Nat’l Research Council, Nat’l Acad. of Science, *DNA Technology in Forensic Science*, 74 (1992) (emphasis added).

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<sup>67</sup> *See also* 4 Mod. Sci. Evid. § 32:45 (“The criteria for absolute identification . . . are the product of probabilistic intuitions widely shared among fingerprint examiners, not of scientific research.”); David A. Stoney, *Fingerprint Identification: Scientific Status*, in 3 Mod. Sci. Evid.: The Law and Science of Expert Testimony § 32:45 (David L. Faigman et al. eds., 2002) (“probability models . . . simply do not exist for fingerprint pattern comparisons”); Saks, 49 Hastings L. J. at 1105-06 (fingerprint “practitioners use no probability models and have no probability data to use”); 2009 NRC Report at 139-40 (“Little research has been directed toward developing population statistics [for fingerprints], although more would be feasible.”).

<sup>68</sup> *See* [www.fbi.gov/hq/lab/fsc/backissu/jan2006/research/2006\\_01\\_research02.htm](http://www.fbi.gov/hq/lab/fsc/backissu/jan2006/research/2006_01_research02.htm).

Courts have recognized in other forensic contexts that “[o]nce the observation has been made that there is a match between the known (i.e., suspect’s) and questioned (i.e., crime scene) samples, **the significance of that determination must be ascertained and expressed to the jury.**” *United States v. Yee*, 134 F.R.D. 161, 180 (N.D. 1991) (emphasis added); *see also Porter*, 618 A.2d at 640 (“We would not permit the admission of test results showing a DNA match (a positive result) without telling the jury anything about the likelihood of that match occurring.”) (citation, quotation, and modification omitted). Likewise in the context of fingerprint identification, courts and juries cannot assess the import of an examiner’s declaration of a “match” without knowing “[h]ow likely is it that a random person could have made this print?” . . . [but] there are no reasonable data and no scientific model that would allow an answer.” 4 Mod. Sci. Evid. § 32:48.

Instead of probability statistics, the latent fingerprint field relies on the experience and memory of individual print examiners. As the NRC reported, “[t]he fingerprint community continues to assert” that “a lengthy apprenticeship . . . with an experienced latent print examiner enables a new examiner to develop . . . a sense of how much friction ridge detail could be common to two prints from different sources.” 2009 NRC Report at 140-41 (emphasis added). As one court explained in the context of evaluating ballistics testimony: “In effect, . . . [the examiner] just compares the image in front of him to what he **remembers** from all those previous exams.” *Green*, 405 F. Supp. 2d at 112 (emphasis in original). Similarly in the context of latent prints, the examiner is ostensibly consulting a mental file that includes images of every print he has ever examined, and is using this memory “database” to determine that the amount of

similarity he observes in the two prints before him is sufficiently rare that he can conclude with absolute certainty that the two prints come from the same person.<sup>69</sup>

The fact that latent print examiners make identifications without any evidence of probability statistics means that jurors are presented with evidence they cannot evaluate in a logical manner. “Without the probability assessment, the jury does not know what to make of the fact that the patterns match: the jury does not know whether the patterns are as common as pictures with two eyes, or as unique as the Mona Lisa.” *Yee*, 134 F.R.D. at 181. Simply put: “no numbers, no knowledge.” *Id.* (quotation and citation omitted, emphasis added). The absence of such evidence is particularly problematic because jurors walk into court with a preconception that fingerprints constitute infallible evidence of identity.<sup>70</sup> Testimony regarding a fingerprint identification submits an identification to the jury – not just without any information about how the identification should be weighed – but without any evidence to counteract the jury’s preexisting sense that the identification is “an unassailable symbol of truth.” Specter, M., *Annals of Crime: Do Fingerprints Lie?*, *The New Yorker*, pp. 90-105, at 96 (May 27, 2002). The

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<sup>69</sup> Christophe Champod, *Fingerprint Examination: Towards More Transparency*, 7 *Law, Probability & Risk* 111, 114 (June 2008) (“It is fair to say that the ACE-V protocol remains obscure when it comes to the decision and inferential processes.”).

<sup>70</sup> See, e.g., *Crisp*, 324 F.3d at 276 (Michael, J., dissenting) (“the general public, which sees movies and television programs that regularly portray fingerprinting and other forensic techniques as key to crime solving, regards fingerprint identification as perfectly reliable”); *People v. Safford*, 910 N.E.2d 143, 154 (Ill. App. Ct. 2009) (“Fingerprint evidence is extremely persuasive. A jury may be so swayed by such evidence that strong alibi witnesses have little chance of being found credible when fingerprint evidence points to the defendant being present at the scene of the crime. The persuasiveness of fingerprint evidence reinforces the need to require a proper foundation to establish its admissibility.”); *United States v. Mitchell*, 365 F.3d 215, 228-29 (3d Cir. 2004) (“the defense introduced a survey of jurors that found that 93% agreed with the statement ‘fingerprint identification is a science’ and 85% agreed with the statement ‘fingerprints are the most reliable means of identifying a person.’”); Newman, A., *Fingerprinting’s Reliability Draws Growing Court Challenges*, *The New York Times*, Apr. 7, 2001, at A8 (“In the long history of forensic science, prosecutors have found few weapons more powerful than the fingerprint. The whorls, arches, ridges and loops left on a surface by the skin’s oil have long been considered virtually unassailable evidence tying a person to a crime.”).

possibility that jurors will overvalue unreliable information assuming the mantle of science is the very risk the *Frye* standard was designed to prevent.<sup>71</sup>

**4. The relevant scientific community recognizes that latent fingerprint examination is a subjective analysis conducted without standards or controls for bias.**

A final reason the relevant scientific community does not generally accept the claims of latent print examiners is the field's lack of standards to cabin the subjective decisions of individual examiners, provide for transparency, or control for bias. The relevant scientific community has recognized that ACE-V leaves so much room for individual subjective decisions that it cannot "ensure repeatability . . . [it] does not guarantee that two analysts following it will obtain the same results." 2009 NRC Report at 142. "[T]he ACE-V method does not specify particular measurements or a standard test protocol, and examiners must make subjective assessments throughout." *Id.* at 139. As a result, "examiners differ at each stage of the method in the conclusions they reach. To the extent that they differ, some conclusions are invalid." *Id.* at 143 (quoting Haber & Haber, 7 Law, Probability & Risk 87). "In fact, recent research . . . has shown that experienced examiners do not necessarily agree with even their own past conclusions when the examination is presented in a different context some time later." *Id.* at 139. In short, a standardless decision-making process produces unreliable results.

The problematic absence of standards was addressed in the description of the latent print examination process, *supra*, and includes:

- No generally accepted or uniform standards for reaching the ultimate conclusion that a suspect's print can be identified as the exclusive source of a latent print: "[T]he amount of correspondence in friction ridge detail that is necessary for a conclusion of identity has not

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<sup>71</sup> See also 2009 NRC Report at 4 (citing "the potential danger of giving undue weight to evidence and testimony derived from imperfect testing and analysis").

been established.” Lee and Gaensslen, ADVANCES IN FINGERPRINT TECHNOLOGY, at 329-30.

- No generally accepted or uniform standards for determining whether a latent print is of value for comparison: There is “no methodology in place that is capable of measuring the amount of detail that is available in a fingerprint for comparison to another.” 4 Mod. Sci. Evid. § 32:46.<sup>72</sup>
- No standards for determining what aspects of a print should be examined or how they should be measured: In other words, “before examining two fingerprints, one cannot say a priori which features should be compared. Features are selected . . . when a fingerprint examiner identifies which features are common to the two impressions and are clear enough to be evaluated.” 2009 NRC Report at 139.
- No standards for distinguishing between differences that can be explained and those that prohibit an identification: Despite the “one discrepancy rule,” “there are no objective standards in the Comparison phase that determine the allowances that can be made for the minor ‘explainable’ discrepancies that are inherent in fingerprints.” 4 Mod. Sci. Evid. § 32:46.<sup>73</sup>
- No standards for conducting a verification: As the OIG Report observed, under the “FBI documentation requirements, which were similar to those in place in other forensic laboratories,” “[t]he documentation requirement for a verification was satisfied when the

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<sup>72</sup> The OIG noted this absence and recommended that the FBI “[e]stablish[] criteria to determine a latent fingerprint to be a print ‘of value,’ including minimum latent print quality considerations.” OIG Report at 197. No such standards currently exist.

<sup>73</sup> The OIG Report likewise concluded that “[n]othing in the standards [employed by the FBI] required the examiners to justify their explanations for differences in appearance between the latent and known prints . . . or even to document the differences or explanations at all.” OIG Report at 198.

second examiner wrote the word 'verified' on the case notes followed by his signature and date." OIG Report at 122.

- No standards for documentation: "Currently, there is no requirement for examiners to document which features within a latent print support their reasoning and calculations." 2009 NRC Report at 143.<sup>74</sup>
- No standards for training or certification of latent print examiners: Both the IAI and SWGFAST offer training publications but "they are not required, and there is no auditing of the content of the training programs developed by nonaccredited agencies." 2009 NRC Report at 137. There are also no certification requirements for print examiners. *See* 4 Mod. Sci. Evid. § 32:47 (noting the "voluntary certification process").<sup>75</sup>

An additional and serious problem is the absence of standards to limit recognized problems of bias. As a rule, "[s]cience takes great pains to avoid biases by using strict protocols to minimize their effects." 2009 NRC Report at 122. "Unfortunately, at least to date, there is no

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<sup>74</sup> Indeed, in this case it is defense counsel's understanding that neither the original examiner nor the verifying examiner documented **any** aspect of their analysis, such as what points the latent and known print allegedly have in common, where those points are allegedly located, or even how many points the two prints are alleged to share.

<sup>75</sup> In the absence of training requirements, most examiners learn on the job. As one commentator explained:

The harsh reality is that latent print training as a structured, organized course of study is scarce. Traditionally, fingerprint training has centered around a type of apprenticeship, tutelage, or on-the-job training, in its best form, and essentially a type of self study, in its worst. . . . Such apprenticeship is most often expressed in terms of duration, not in specific goals and objectives, and often end with a subjective assessment that the trainer is ready.

David L. Grieve, *The Identification Process: The Quest For Quality*, 40 J. of Forensic Identification 109, 110-111 (1990). *See also* Budowle, FBI Laboratory, 54 J. Forensic Science at 805 ("with the exception of DNA, there are no established mandatory acceptable minimum [education and training] standards across the U.S."); Haber & Haber, 7 Law, Probability & Risk at 94 ("Most examiners receive the majority of their training on the job, without either a formal structure of topics covered or formal assessment of success in meeting training goals.").

good evidence to indicate that the forensic science community has made a sufficient effort to address the bias issue . . . .” *Id.* at 8 n.8. Specifically, the 2009 NRC Report concluded that the ACE-V method “**does not guard against bias.**” *Id.* at 142 (emphasis added). Indeed, the 2009 NRC Report identified forms of both contextual and cognitive bias that make latent fingerprint identifications unreliable.<sup>76</sup> For example, the NRC cited an experiment by Dr. Itiel Dror where “experienced fingerprint examiners were asked to analyze fingerprints that, unknown to them, they had analyzed previously in their careers.” *Id.* at 123. The study demonstrated the effects of contextual bias, which occurs when print examiners are influenced by what they hear about the case or the print identification (the context) at the time they evaluate the print. As the NRC explained, in Dror’s study:

For half the examinations, contextual biasing was introduced. For example, the instructions accompanying the latent prints include information such as the “suspect confessed to the crime” or the “suspect was in police custody at the time if the crime.” In 6 of the 24 examinations that included contextual manipulation, the examiners reached conclusions that were consistent with the biasing information and **different from the results they had reached when examining the same prints in their daily work.**

*Id.* (citing I.E. Dror and D. Charlton, *Why Experts Make Errors*, 56 J. of Forensic Identification 600 (2006)) (emphasis added); *see also* Dror and D. Charlton, *Contextual Information Renders*

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<sup>76</sup> As the NRC explained: “A common cognitive bias is the tendency for conclusions to be affected by how a question is framed or how data are presented. . . . Forensic scientists also can be affected by this cognitive bias if, for example, they are asked to compare two particular . . . fingerprints – one from the crime scene and one from a suspect – rather than comparing the crime scene exemplar with a pool of counterparts.” *Id.* at 122-23. Yet latent print evaluations are always conducted as a comparison between the crime scene exemplar and the suspect’s prints, and there are no standards designed to limit the biasing effect of this process. Another “common cognitive bias is the tendency to see patterns that do not actually exist.” *Id.* at 124. This form of bias is particularly problematic in latent print analysis, where “examiners *intuit* when the amount and rarity of the consistent ridge detail is ‘sufficient’ to warrant the conclusion that the potential donor pool has been reduced to one.” Brief of Amici Curiae, *Comm. v. Patterson*, 840 N.E.2d 12 (Mass. 2005), 2005 WL 3734340, at \*16 (emphasis in original). As the NRC made clear, “human intuition is not a good substitute for careful reasoning where probabilities are concerned.” 2009 NRC Report at 124.

*Experts Vulnerable to Making Erroneous Identifications*, 156 J. of Forensic Identification 74, 77 (Dec. 2005) (“Our study shows that it is possible to alter identification decisions on the same fingerprint, solely by presenting it in a different context.”). Despite the demonstrated risk of contextual bias, there are no standards that govern the amount or nature of information made available to examiners when they conduct latent print evaluations.<sup>77</sup>

The 2009 NRC Report highlighted the point that although in science, “[t]he goal is to make scientific investigation as **objective** as possible so the results do not depend on the investigator,” *id.* at 124 (emphasis added), “the ACE-V method does not specify particular measurements or a standard test protocol, and examiners make **subjective** assessments throughout.” *Id.* at 139 (emphasis added). Because “the assessment of latent prints from crime scenes is based largely on human interpretation” without any standards to govern the exercise of subjective decision-making, the fact-finder cannot be confident that results of a latent print analysis are reliable. *Id.*

### III. THE LATENT FINGERPRINT TESTIMONY SHOULD BE EXCLUDED AS MORE PREJUDICIAL THAN PROBATIVE

Even if this Court does not recognize that, at the very least, there is a dispute regarding the reliability of latent print identification in the relevant community sufficient to preclude admission under *Frye*, the fingerprint testimony should still be excluded as more prejudicial than probative. *Jones*, 548 A.2d at 40 (“if the [*Dyas*] criteria are met, the court evaluates probative value against prejudicial impact before deciding whether to admit the testimony”). The examiner’s testimony will be extremely prejudicial, as it is well established that “expert or scientific testimony possesses an aura of special reliability and trustworthiness.” *Burgess*, 953

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<sup>77</sup> See 2009 NRC Report at 6 (“even when protocols are in place (e.g., SWG standards), they often are vague and not enforced in any meaningful way”).

A.2d at 1062 (citation and quotation omitted). “Because ‘science’ is often accepted in our society as synonymous with truth, there is a substantial risk of overweighting by the jury.” *Bible*, 858 P.2d at 1181 (quotation and citation omitted).<sup>78</sup> Jurors are particularly inclined to view fingerprint evidence as infallible: “most if not all of the claims made by or on behalf of fingerprint examiners enjoy widespread and unquestioning belief among the lay public.” 4 Mod. Sci. Evid. § 32:1.<sup>79</sup> As one latent print examiner observed in an article for the National District Attorneys Association: “Fingerprints are accorded a degree of respect almost unequaled among all other forms of physical evidence. . . . ‘The testimony of the fingerprint expert can be devastating.’” Nielson at 32 (quoting Bailey and Rothblatt, CROSS-EXAMINATION IN CRIMINAL TRIALS, 256 (1978)). The risk of prejudice is exacerbated by the absolute language examiners are professionally required to use when testifying about a latent print identification. “A false aura of scientific infallibility, coupled with low probative value . . . multiplies the hazards of misleading a jury.” *In re Agent Orange Prod. Liab. Lit.*, 611 F. Supp. 1223, 1256 (E.D.N.Y. 1985). While the risk of prejudice is well established, the probative value of the testimony, as described herein, has not yet been demonstrated. Precisely “because fingerprint identification

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<sup>78</sup> See *United States v. Addison*, 498 F.2d 741, 744 (D.C. Cir. 1974) (“scientific proof may in some instances assume a posture of mystic infallibility in the eyes of a jury of laymen”); *United States v. Hines*, 55 F. Supp. 2d 62, 64 (D. Mass. 1999) (“a certain patina attaches to an expert’s testimony unlike any other witness; this is ‘science,’ a professional’s judgment, the jury may think, and give more credence to the testimony than it may deserve.”); *Williamson v. Reynolds*, 904 F. Supp. 1529 (E.D. Okla. 1995) (“forms of expert examination and testimony have been criticized because jurors may be awed by an ‘aura of special reliability and trustworthiness’ which may cause undue prejudice, confuse the issues or mislead the jury”) (quoting *United States v. Amaral*, 488 F.2d 1148, 1152 (9th Cir. 1973)); *Ramirez*, 810 So.2d at 844 (“The trustworthiness of expert scientific testimony is especially important because oftentimes ‘[t]he jury will naturally assume that the scientific principles underlying the expert’s conclusion are valid.’”); *O’Key*, 899 P.2d at 672 (“Evidence perceived by lay jurors to be scientific in nature possesses an unusually high degree of persuasive power.”); *People v. Leahy*, 882 P.2d 321, 325 (Cal. 1994) (“‘Lay jurors tend to give considerable weight to ‘scientific’ evidence when presented by ‘experts’ with impressive credentials’”) (quoting *Kelly*, 549 P.2d at 1245).

<sup>79</sup> See *supra* note 70.

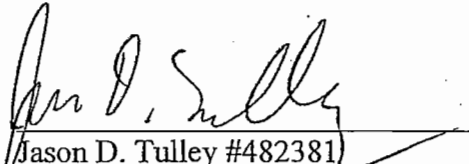
has been both oversold and under-researched,” the testimony should be excluded as more prejudicial than probative. 4 Mod. Sci. Evid. § 32:1.

#### IV CONCLUSION

The relevant scientific community recognizes that there is no scientific evidence validating fingerprint identifications, the claim of infallibility has been disproven, the meaning of a match is meaningless in the absence of probability data, and the analysis is a subjective and standardless process. In sum, “[t]he relevant question is . . . whether there is a general consensus [in the relevant scientific community] that fingerprint examiners can make reliable identifications on the basis of . . . basic ridge characteristics. The answer to that question is plainly no.” Mears & Day, 19 Ga. St. U. L. Rev. at 744. And even the strongest advocates of latent print analysis must acknowledge the existence of “active debate in the scientific, fingerprint practitioner and legal communities.” 4 Mod. Sci. Evid. § 32:53. The fingerprint testimony should accordingly be excluded. In the alternative, the fingerprint testimony should be excluded as more prejudicial than probative.

WHEREFORE, based on the foregoing reasons, Mr. Keita respectfully requests that this Court grant a hearing on this Motion to exclude the latent fingerprint testimony. Mr. Keita reserves the right to supplement this Motion upon disclosure of additional discoverable material by the government.

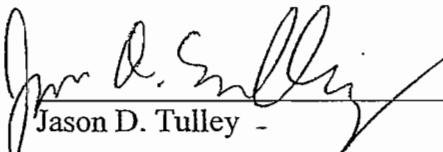
Respectfully submitted,

  
Jason D. Tulley #482381  
Tiffany Sizemore  
Counsel for Mr. Keita

Public Defender Service  
633 Indiana Ave. N.W.  
Washington, DC 20004  
202-824-2434

#### CERTIFICATE OF SERVICE

I HEREBY CERTIFY that the foregoing Motion was served upon the Office of the United States Attorney, attn: AUSA Sarah Schall, 555 4th Street, N.W. Washington, D.C. 20001, by hand, on October 30, 2009.

  
Jason D. Tulley -

**SUPERIOR COURT OF THE DISTRICT OF COLUMBIA**  
**Criminal Division – Felony Branch**

<b>UNITED STATES</b>	: Criminal Case No. 2008 CF 2 26777
	:
<b>v.</b>	: Hon. Robert E. Morin
	:
<b>HAMZA KEITA</b>	: Trial Date: February 22, 2009

**APPENDICES**  
**TO MOTION TO EXCLUDE LATENT FINGERPRINT EXAMINATION TESTIMONY**

- Appendix A:** A description of the evolution of the judicial treatment of CBLA in response to a shift in scientific opinion, as reflected in a NRC report, and its ultimate exclusion from the courtroom.
- Appendix B:** Representative cases illustrating that courts have consistently declined to limit the relevant community to forensic practitioners when evaluating the general acceptance of a range of forensic techniques.
- Appendix C:** Case law recognizing that NRC committees represent a cross section of the scientific community; citing the NRC as authoritative for purposes of determining general acceptance; acknowledging the expertise of the National Academy of Sciences; describing NRC reports as “authoritative;” and demonstrating that courts and federal agencies follow the recommendations of NRC reports when making a range of decisions.
- Appendix D:** A description of the individual members of the 2009 NRC Report Committee (The Committee on Identifying the Needs of the Forensic Science Community).
- Appendix E:** Six common sources of distortion in latent prints.
- Appendix F:** List of at least 31 different representatives of the relevant scientific community who have acknowledged or criticized the dearth of evidence validating latent fingerprint identification, even before the 2009 NRC Report was released.
- Appendix G:** Relevant sections of the 2009 NRC Report, *Strengthening Forensic Science in the United States: A Path Forward*, National Research Council, National Academy of Science (Feb. 2009).
- Appendix H:** 36 documented examples of erroneous conclusions by latent print examiners and 13 other latent print analysis errors that demonstrate the unreliability of latent print identifications.