IN THE COURT OF APPEALS OF THE STATE OF OREGON

STATE OF OREGON, Plaintiff-Respondent, v. AUDREY BETH CANNON, Defendant-Appellant.	MULTNOMAH Co. Cir. Ct. Case No. 15CR51118 CA A162360

**BRIEF OF *AMICI CURIAE*
OREGON INNOCENCE PROJECT AND
DR. SIMON A. COLE IN SUPPORT OF
APPELLANT CANNON**

Appeal from Judgment of the Circuit Court
for MULTNOMAH County

The Honorable Henry Kantor, Judge

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TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

Cases

Other Authorities

I. STATEMENT OF *AMICI CURIAE*

Oregon Innocence Project (OIP) is a program of the Oregon Justice Resource Center. OIP works to exonerate the innocent, train law students, and promote legal reforms aimed at preventing wrongful convictions. OIP is the only program in Oregon dedicated to securing the release of wrongfully convicted inmates.

Dr. Simon A. Cole is a Professor of Criminology, Law, and Society at the University of California at Irvine. Dr. Cole earned his PhD from Cornell University in Science & Technology Studies and has consulted, spoken, and testified regarding the scientific literature underpinning fingerprint identification. Dr. Cole has also published scholarship in the area of forensic science, evidence, and fingerprint identification. He is the author of *Suspect Identities: A History of Fingerprinting and Criminal Identification* (Harvard University Press, 2001), which was awarded the 2003 Rachel Carson Prize by the Society for Social Studies of Science. He is also a co-author of *Truth Machine: The Contentious History of DNA Fingerprinting* (University of Chicago Press, 2008).

Amici have not investigated the merits of Ms. Cannon's assertions and take no position on her innocence or guilt. *Amici* appear in this matter to offer information about the current state of scientific research in the area of latent fingerprint analysis. Based on the current state of the research, *Amici* urge the

court to enhance the truth-seeking functions of the criminal justice system by excluding expert opinion that exceeds the limits of science. *Amici* advocate for decisions based on sound science whenever possible. Expert testimony that exceeds the limits of science is unreliable and must be rejected.

II. SUMMARY OF ARGUMENT

The trial court erred when it failed to exercise its gatekeeping function to require the latent fingerprint examiner to offer testimony to support the scientific validity of each of her opinions and to exclude those opinions that exceed the limits of the science.

There is a widespread misperception that latent fingerprint analysis is infallible. Television crime dramas often show detectives relying on fingerprint evidence to solve complex crimes. The method of latent fingerprint analysis is portrayed as objective and unerring.

In reality, while latent fingerprint analysis may be an important investigative tool, it is subjective and vulnerable to mistakes and misstatements. In this case, the examiner testified to opinions that have been widely rejected by the relevant scientific community, and those opinions were not properly analyzed by the trial court to determine scientific validity. The examiner's testimony follows a trend seen in other parts of the country. Recent research has "found that expert witnesses

have often overstated the probative value of their evidence, going far beyond what the relevant science can justify."[1]

And real-world experiences from around the country prove that wrongful convictions can, and do, occur as a result of latent print misattributions.

III. ARGUMENT

Courts in Oregon are familiar with the Brandon Mayfield case where a latent print misattribution identified the wrong man in a high profile bombing case. Mr. Mayfield, an attorney in Washington County, Oregon, was falsely identified by FBI examiners as the source of latent prints on a bag of unexploded detonators linked with the 2004 Madrid train bombings.[2] An FBI examiner concluded with "100 percent certainty" that the latent print and Mr. Mayfield's known print—which was one of several prints identified as possible matches on a computer-generated list—were in agreement at 15 "points" of comparison and were,

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[1] President's Council of Advisors on Science and Technology, *Report to the President, Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (2016), available at: https://obamawhitehouse.archives.gov/blog/2016/09/20/pcast-releases-report-forensic-science-criminal-courts (last visited July 2, 2017) [hereinafter "PCAST Report (2016)"], at 3.

[2] U.S. Dep't of Justice, Office of the Inspector General, *A Review of the FBI's Handling of the Brandon Mayfield Case* 1 (2006) [hereinafter "OIG Report (2006)"].

therefore, made by the same source.[3] The alleged match was then "verified" by a

second examiner and reviewed by a unit chief, both of whom concurred with the

identification.[4] An independent court-appointed fingerprint examiner reached the

same conclusion.[5] Nonetheless, Spanish authorities later attributed that latent print

to a different person—Algerian national, Ouhnane Daoud—and the FBI agreed

that Mr. Daoud was actually the source of the print.[6] Mr. Mayfield was released

from custody and cleared of all suspicion.[7]

     That case, and the growing questions surrounding traditional forensic

disciplines, drew attention to the fact that latent fingerprint analysis is not infallible,

as it was once believed to be. The attention has not been one-sided. The U.S.

Department of Justice recognized the limits of the method and authored its own

report.[8] More recently, in September 2016, the President's Council of Advisors on

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[3] *Id.*

[4] *Id.*

[5] Simon A. Cole, *More Than Zero: Accounting for Error in Latent Fingerprint Identification*, 95 J. CRIM. L. & CRIMINOLOGY 985, 986 (2005); OIG Report (2006) at 1-3.

[6] *Id.*

[7] *Id.*

[8] *Supporting Documentation for Department of Justice Proposed Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline*, available at: https://www.justice.gov/archives/dag/forensic-science (last visited July 2, 2017) [hereinafter, "DOJ Report"]. According to the Department's website,

Science and Technology—an advisory group of the nation's leading scientists and

engineers appointed by the President to augment the science and technology advice

available to him—authored a study in an attempt to help close the gaps in a number

of forensic "feature-comparison" methods, including latent fingerprint analysis (the

"PCAST Report").[9]

The authors of the PCAST Report recognized that the admissibility of expert

testimony should turn on a method's scientific validity.[10] A method is not

"scientifically valid" unless it has both "foundational validity" and "validity as

applied."[11]

To be "foundationally valid," a method must be "shown, based on empirical

studies, to be repeatable, reproducible, and accurate, at levels that have been

measured and are appropriate to the intended application."[12] The proponent of a

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the Uniform Language for Testimony and Reports is now closed to public
comment and is under revision.

[9] *See* PCAST Report (2016).

[10] *Id*. at 4.

[11] *Id.*

[12] *Id.* The PCAST Report further clarified that "repeatable" means "that, with
known probability, an examiner obtains the same result, when analyzing samples
from the same sources"; "reproducible" means "that, with known probability,
different examiners obtain the same result, when analyzing the same samples"; and
"accurate" means "that, with known probabilities, an examiner obtains correct
results both (1) for samples from the same source (true positives) and (2) for

method must establish two elements:

> (1) A reproducible and consistent procedure for (a) identifying features within evidence samples; (b) comparing the features in two samples; and (c) determining, based on the similarity between the features in two samples, whether the samples should be declared to be a proposed identification ("matching rule").

> (2) Empirical measurements, from multiple independent studies, of (a) the method's false positive rate—that is, the probability it declares a proposed identification between samples that actually come from *different* sources and (b) the method's sensitivity—that is, probability that it declares a proposed identification between samples that actually come from the *same* source.[13]

Even if a method is foundationally valid, any expert testimony based on that method must also be foundationally valid.[14] In particular, "*[s]tatements claiming or implying greater certainty than demonstrated by empirical evidence are scientifically invalid*."[15]

The examiner, in this case, testified to conclusions that are scientifically invalid when she claimed that the latent print and the known print originated from

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samples from different sources (true negatives)." *Id.* at 47.

[13] *Id.* at 48 (emphasis in original).

[14] *Id.* at 54.

[15] *Id.* (emphasis in original).

the same source (Ms. Cannon),[16] made an in-court identification of Ms. Cannon as

the perpetrator,[17] implied that the methodology has a zero error rate by stating that

Portland Police Bureau had never made a mistaken identification,[18] and asserted

that she could tell when the latent print was left by the way in which the dust

settled around it.[19]

As discussed in more detail below, by going beyond the limits of the

methodology, the examiner suggests that her opinion is conclusive of guilt. Latent

fingerprint analysis does not support that conclusion.

The trial court did not properly exercise its role as "gatekeeper" to require the

latent fingerprint examiner to offer testimony to support the scientific validity of

each of her opinions and exclude those opinions that exceed the limits of the

science.

A.   Background on Validation of Latent Fingerprint Analysis

American courts have long relied upon fingerprint analysis. The authors of

the PCAST Report recognized that "[t]he method was long hailed as infallible,

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[16] Tr. 265:20-21 and 278:15-21.

[17] Tr. 282:2-8.

[18] Tr. 266:12-14 and 315:23-316:1.

[19] Tr. 303:12-18.

despite the lack of appropriate studies to assess its error rate."[20] Indeed, "validity was assumed rather than proven."[21]

In recent years, however, forensic science associating marks or impressions with specific sources has come under intense scrutiny—first, in the academic literature, then in the courtroom, and then in reports by scientists, including those convened by the National Research Council, the National Institute of Justice and National Institute of Science and Technology, and the President's Council of Advisors on Science and Technology.[22]

1.   The methodology behind latent fingerprint analysis is a subjective process known as ACE-V.

Latent fingerprint analysis involves comparing (1) a "latent print" with (2) one or more "known prints" to assess whether the two may have originated from

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[20] PCAST Report (2016) at 87.

[21] *Id.*

[22] *See* Expert Working Group on Human Factors in Latent Print Analysis, National Institute on Science and Technology, *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach*, at 113 (2012), available at: https://www.nist.gov/publications/latent-print-examination-and-human-factors-improving-practice-through-systems-approach [hereinafter, "NIST Report (2012)"]. *See also* National Research Council, *Strengthening Forensic Science in the United States, a Path Forward*, at 136 (2009), available at: https://www.nap.edu/catalog/12589/strengthening-forensic-science-in-the-united-states-a-path-forward [hereinafter, "NAS Report (2009)"]. *See also* PCAST Report (2016) at 87.

the same source.[23] A "latent print" is a complete or partial friction-ridge

impression from an unknown source.[24] A "known print" is a fingerprint collected

under a controlled setting from a known subject.[25]

Latent fingerprint examiners, like Ms. Willard in this case, generally claim

to follow the "ACE-V" Method (Analysis, Comparison, Evaluation, and

Verification).[26] Fingerprint examiners in the United States claim to have used the

"ACE-V" method for over fifty years, with little change in the basic

methodology.[27]

In the first step, "analysis" (A), the examiner purports to study the latent

(unknown) print and assess the quality and quantity of detail present.[28] Details

might include both "class" characteristics—characteristics shared or common

within certain subgroups of prints—and "individual" characteristics or

"minutiae"—characteristics not known to be shared or common within

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[23] PCAST Report (2016) at 88.

[24] *Id.*

[25] *Id.*

[26] NIST Report (2012) at 1.

[27] *See* NAS Report (2009) at 137. *See also* NIST Report (2012) at 3; PCAST Report (2016) at 89.

[28] NIST Report (2012) at 2.

subgroups.[29] In a different process known as "linear ACE-V," the examiner would fully analyze and document the characteristics of the latent print before comparing it to any known suspect print or computer-generated list of known prints to avoid contaminating the comparison stage with cognitive bias.[30]

The examiner then "compares" (C) the latent print to a "known" print of a suspect or a computer-generated list of potentially similar reference prints housed in a database of known prints.[31] Based on her subjective judgment and experience, the examiner documents what she believes to be similarities and differences between the latent and known prints.[32]

The examiner then "evaluates" (E) what she perceives as the rarity of the consistencies between the prints based on her subjective judgment and experience. If the examiner thinks that the consistencies are so rare that they appear only once in the world's population, she reports that the prints come from the same source.[33] Finally, in most latent print analysis, a second examiner will "verify" (V) the initial

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[29] S.H. James, *Forensic Science: An Introduction to Scientific and Investigative Techniques*, CRC Press, at 330 (4th ed. 2014).

[30] PCAST Report (2016) at 17, 99-100.

[31] NIST Report (2012) at 5.

[32] *Id*. *See also* PCAST Report (2016) at 89 n 248.

[33] NIST Report (2012) at 7.

examiner's analysis.[34]

2. The myth of infallibility stems from a faulty assumption.

The ACE-V method was long hailed as infallible.[35] The myth of infallibility stems from the assumption that the pattern on one's finger is always an exact match to the impression left behind. That assumption is faulty.

Although some examiners suggest infallibility by testifying that no two people have the same fingerprint—an assumption that cannot feasibly be tested[36]—the reliability issue with latent fingerprint analysis "was never about errors caused by individuals possessing duplicate fingerprint patterns."[37] The ACE-V process may allow an impression made by one individual to be found consistent with known impressions made by another person with *similar,* though not *identical*, finger patterns:

> Uniqueness and persistence are necessary conditions for friction ridge identification to be feasible, but those conditions do not imply that anyone can reliably discern whether or not two friction ridge impressions were made by the same person. Uniqueness does not guarantee that prints from two different people are always sufficiently different that they cannot be confused, or that two

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[34] NIST Report (2012) at 8.

[35] PCAST Report (2016) at 87.

[36] *See generally* Michael J. Saks & Jonathan J. Koehler, *The Individualization Fallacy in Forensic Science Evidence*, 61 VAND. L. REV. 199, 208-214 (2008).

[37] Cole, *supra*, n 5 at 1041.

impressions made by the same finger will also be sufficiently similar to be discerned as coming from the same source. The impression left by a given finger will differ every time, because of inevitable variations in pressure, which change the degree of contact between each part of the ridge structure and the impression medium.[38]

Indeed, even different impressions made by the same finger are not exact duplicates of one another. The quality and quantity of detail in the latent print may be affected by many different factors, including the robustness of the ridge structure, the presence of oil or sweat, the mechanics of touch, and the nature of the surface touched.[39] When latent print examiners report that two impressions derive from the same source, they are not claiming that the two impressions are exact duplicates. Rather they are claiming that the impressions are different, but *nonetheless*, the examiner believes they derive from the same source. The examiner may be correct, but she also may be incorrect. A latent print and known print may well have a lot of similarities but still be made by different fingers.

In the Mayfield case, FBI examiners relied on the ACE-V methodology

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[38] NAS Report (2009) at 144. *See also* PCAST Report (2016) at 61 ("The issue is not whether objects or features differ; they surely do if one looks at a fine enough level. The issue is how well and under what circumstances examiners applying a given metrological method can reliably detect relevant differences in features to reliably identify whether they share a common source.").

[39] NAS Report (2009) at 137.

when they determined that Mr. Mayfield's print was consistent with the latent print and that these consistencies were deemed rare enough that they must occur only once in the world's population. As it turned out, Mr. Daoud's known print—which was *similar*, but not *identical* to Mr. Mayfield's—was also determined to be consistent with this same latent print.

Despite the lack of empirical data to support the accuracy of latent print conclusions, many in the forensic examiner community assumed, until recently, that the discipline had a zero error rate. That assumption likely persisted because latent print misattribution is difficult to uncover and prove, even in the era of DNA testing. In a world where an ACE-V analysis is considered vindicated by the mere fact of a suspect's conviction, and the lack of any subsequent exoneration, the myth of infallibility was perpetuated.

3. Reports have recognized the lack of validation.

Even before the PCAST Report in 2016, several authoritative reports had recognized that latent fingerprint analysis had yet to be properly validated.

In the wake of the Mayfield case, the Office of the Inspector General ("OIG") issued a report recognizing the need to "research and develop more objective standards for fingerprint identification" and to "provide a more stringent

safeguard against erroneous identifications."[40] In the immediate years after the

OIG Report, courts and scientific advisory boards began to newly question the

"scientific foundation of the fingerprint field," and in particular whether "latent

fingerprint identifications may not be as reliable as previously assumed."[41]

For example, in 2009, the National Academy of Sciences—one of the most

distinguished groups of scholars in the United States, providing guidance to

Congress and the President since 1863[42]—called for empirical studies to test the

foundational validity of latent print analysis as a means of forensic identification.

The authors of the NAS Report recognized that "the ACE-V method does not

specify particular measurements or a standard test protocol," making the outcomes

of the method "not necessarily repeatable from examiner to examiner."[43] The

authors further noted that those in the latent print field cannot even say "a priori

which features should be compared" because certain features of the fingerprint

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[40] OIG Report (2006) at 10, 11.

[41] NAS Report (2009) at 43 (citing *State of Maryland v. Rose*, In the Circuit Court for Baltimore County, Case No. K06-545 (a county circuit court decision in which the court concluded that latent fingerprint analysis is "a subjective, untested, unverifiable identification procedure that purports to be infallible," and the court refused to allow a fingerprint examiner to testify that the defendant was the source of a latent print)).

[42] *See http://www.nasonline.org/about-nas/mission/* (last visited July 2, 2017).

[43] NAS Report (2009) at 139.

may not have been captured by the latent print or differences can arise during the impression process.[44]

Based on these and other concerns, the National Academy ultimately concluded that ACE-V's foundational validity had not been established:

> ACE-V provides a broadly stated framework for
> conducting friction ridge analyses. However, this
> framework is not specific enough to qualify as a
> validated method for this type of analysis. 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.[45]

Two years after the NAS report, the OIG issued yet another report on ACE-V, noting that "[s]everal of the most significant recommendations" that OIG made following the Mayfield case "depend on the results of the FBI Laboratory's ongoing research projects and have not been implemented."[46] The FBI did, to its credit, implement certain changes in response to the 2006 OIG report,[47] but,

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[44] *Id.* at 139.

[45] *Id.* at 142.

[46] U.S. Dep't of Justice, Office of the Inspector General, *A Review of the FBI's Progress in Responding to the Recommendations in the Office of the Inspector General Report on the Fingerprint Misidentification in the Brandon Mayfield Case* 3 (2011) [hereinafter "OIG Report (2011)"].

[47] *Id.* at 17, 18, 27.

ultimately, as of the 2011 OIG report, the FBI had still failed to combat the

inherent lack of repeatability and consistency in ACE-V. The OIG noted that the

agency had not yet achieved its goal of "developing qualitative and quantitative

standards for determining sufficiency" of points of comparison for purposes of

opining about the chances that two prints have a common source.[48] It was the lack

of variability data "based on population distributions of certain friction ridge

features," necessary to create objective criteria for determining the chance that two

prints have a common source, that gave the National Academy of Science the most

pause about ACE-V as a valid method.[49]

> **4.** **The minimal studies that exist reveal a rate of error higher than thought to exist.**

Despite the grave concerns raised in the area of latent fingerprint analysis

and its ongoing use in the courtroom, researchers have conducted only minimal

studies to establish the reliability of the method. And the properly designed studies

to determine validity reveal a rate of error that is higher than once thought.

For a "subjective" method like ACE-V—which is based on examiner

judgment and experience rather than actual population rarity data that could be

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[48] *Id.* at 17-18.

[49] NAS Report (2009) at 141. *See also id.* at 144 ("None 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.").

used to produce objective estimates of the likelihood that two patterns have a common source—PCAST argues that the process of establishing scientific validity "must be treated as a kind of 'black box.'"[50]

Black box studies attempt to evaluate the accuracy and reliability of a method by having many examiners analyze unknown and known samples and draw conclusions. Because the "black box in the examiner's head" cannot be examined directly, "the *only* way to establish the scientific validity and degree of reliability of a *subjective* forensic feature-comparison method—that is, one involving significant human judgment—is to test it *empirically* by seeing how often examiners actually get the right answer."[51]

These studies are used to determine error rates in the method, including the "false positive rate," or the "probability that the method declares a proposed

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[50] PCAST Report (2016) at 49. Some experts believe that validation should be accomplished through population studies to determine the rarity of features. Geoffrey Stewart Morrison et al., *A Comment on the PCAST Report: Skip the "Match/Non-Match" Stage*, 272 FOR. SCI. INT. 7 (2017). Those studies, too, have just begun to occur. Cedric Neumann & Julian Champkin, *Fingerprints at the Crime-Scene: Statistically Certain, or Probable?*, 9 SIGNIFICANCE 21 (2012).

[51] President's Council of Advisors on Science and Technology, *An Addendum to PCAST Report on Forensic Science in Criminal Courts*, at 1 (2017) (emphasis in original), available at: https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensics_addendum_finalv2.pdf (last visited July 11, 2017).

identification between samples that actually come from different sources."[52]

The foundational validity of a subjective "black box" method like ACE-V requires "careful scrutiny" because its "heavy reliance on human judgment" means that it is "especially vulnerable to human error, inconsistency across examiners, and cognitive bias."[53] The authors of the recent (2016) PCAST Report noted that, in the latent print field, "[r]emarkably, there have been only two black-box studies that were intentionally and appropriately designed to assess validity and reliability."[54]

The first study was conducted by the FBI in 2011 in response to the NAS Report.[55] The study consisted of 169 fingerprint examiners and 744 latent-known pairs, 520 "mated" pairs, known to be from the same source, and 224 "non-mated" pairs, known to be from two different sources.[56] Each fingerprint examiner analyzed 100 pairs of prints and classified them as an identification, an exclusion, or inconclusive.[57] The study found six false positive identifications among 3,628

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[52] PCAST Report (2016) at 5-6, 48, 49, 50.

[53] *Id.* at 5.

[54] *Id.* at 91.

[55] *Id.* at 94.

[56] *Id*.

[57] *Id*.

non-mated pairs, resulting in a false positive rate of "1 error in 604 cases, with the upper bound [of the 95% confidence interval] indicating that the rate could be as high as 1 error in 306 cases."[58]

The second study was conducted by the Miami-Dade Police Department Forensic Services Bureau, with funding from the National Institute of Justice.[59] While the study has concluded and the results were posted on the internet, it has yet to be published in a peer-reviewed scientific journal.[60] The study also did not select known-latent print pairs to be similar to each other, "which should, in principle, have made it easier to declare exclusions for the non-mated pairs."[61] Still, the study found 42 false positives among 995 conclusive examinations, for an upper-bound of the 95% confidence interval false positive rate of 5.4%, or 1 in 18.[62]

The authors of the PCAST Report remarked that "[t]he empirically estimated false positive rates are *much higher* than the general public (and, by extension, most jurors) would likely believe based on longstanding claims about

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[58] *Id.*

[59] *Id.*

[60] *Id* at 94-95.

[61] *Id* at 95.

[62] *Id*.

the accuracy of fingerprint analysis."[63]

While the PCAST authors themselves ultimately described ACE-V as foundationally valid, they noted that the "false positive rate * * * is substantial."[64] The PCAST Report concluded that "[a]dditional black-box studies are needed to clarify the reliability of the method" and the authors made a number of recommendations to prevent examiners from making claims about their conclusions that are "not warranted or scientifically justified."[65]

5.   **Courts should re-evaluate the scope of permissible testimony to reflect the current state of the science.**

Although courts have considered and rejected admissibility challenges to latent print testimony in the past, their conclusions should be reconsidered to limit the scope of the permissible testimony.[66] Significantly, all relevant case law on this issue was decided without consideration of the PCAST Report and the research discussed therein.

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[63] *Id.* (emphasis in original).

[64] *Id.* at 101.

[65] *Id.* at 101-02.

[66] *See, e.g., U.S. v. Herrera*, 704 F3d 480 (7th Cir 2013); *In re O.D.*, 221 Cal App 4th 1001 (Cal 2013); *People v. Rivas*, 238 Cal App 4th 967 (Cal 2015); *U.S. v. Havvard*, 260 F3d 597 (7th Cir 2001); *U.S. v. George*, 363 F3d 666 (7th Cir 2004); *U.S. v. Crisp*, 324 F3d 261 (4th Cir 2003); *U.S. v. Mitchell*, 365 F3d 215 (3d Cir 2004).

For example, in *United States v. Herrera*, the Seventh Circuit did not rely on the current known error rates of latent fingerprint analysis, instead relying on a review of exonerations in the United States.[67] While the court found "errors in fingerprint matching by expert examiners * * * to be very rare," the Seventh Circuit was not able to take into account either the 2011 FBI study or the 2014 Miami-Dade study reviewed in the PCAST Report.[68] As the PCAST Report noted, the known false positive error rate may be as high as 1 in 18.[69] The *Herrera* court focused largely on the uniqueness of fingerprints, failing to take into account other factors, including the probability of an erroneous match.[70]

Courts should re-evaluate the scope of permissible testimony as the state of the science evolves.

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[67] *Herrera*, 704 F3d at 487 (rejecting the defendant's argument that latent fingerprint analysis has not been shown to be reliable enough to be admissible as evidence under Federal Rule of Evidence 702 and *Daubert*).

[68] *Id.* at 487; PCAST Report (2016) at 95-97.

[69] PCAST Report (2016) at 95-96, 101-02.

[70] *Herrera*, 704 F3d at 487.

B.   Analysis Under Oregon Law

1.   Under Oregon law, the trial court is required to exercise its gatekeeping function to exclude expert opinions that exceed the limits of the science.

Although appellate courts in other jurisdictions have addressed the admissibility of expert testimony on fingerprint analysis, none have done so under the proper legal framework applicable in Oregon. Under Oregon law, because "evidence perceived by lay jurors to be scientific in nature possesses an unusually high degree of persuasive power," trial courts must screen out misleading or otherwise unsound scientific testimony; acting as a "gatekeeper" to "ensure that the persuasive appeal is legitimate."[71] That is, the court must "exclud[e] 'bad science' to control the flow of confusing, misleading, erroneous, prejudicial, or useless information to the trier of fact."[72]

The Oregon Supreme Court's *Brown/O'Key* standard governs the admissibility of expert testimony in Oregon. Under that standard, expert testimony is admissible if it is relevant under OEC 401, would assist the trier of fact under OEC 702, and is not subject to exclusion under OEC 403 because its probative value is outweighed by the danger of unfair prejudice or jury confusion.[73]

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[71] *State v. O'Key*, 321 Or 285, 291, 307, 899 P2d 663 (1995).

[72] *Id*. at 306.

[73] *Marcum v. Adventist Health System/West*, 345 Or 237, 243, 193 P3d 1 (2008).

The critical question is the "scientific validity of the general propositions utilized by the experts."[74]

The Oregon Supreme Court has already recognized the importance of careful consideration of the scientific bases for each aspect of an expert's proposed testimony.[75] It is not enough in Oregon to find that the subject matter of proposed expert testimony is generally valid.[76]

The Oregon Supreme Court has been a leader in the analysis of scientific advances in areas that were previously accepted in criminal cases. The decision in *State v. Lawson* is a prime example.[77] There, the court reviewed and relied upon scholarly and scientific research to understand the significant advances in memory science despite the past reliance on eyewitness identifications that were admitted in Oregon courts for decades. The court relied on these advances to change and limit the manner in which eyewitness identifications are conducted and admitted into evidence.

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[74] *Id.* at 245 (citing *Jennings v. Baxter Healthcare Corp.*, 331 Or 285, 303, 14 P3d 596 (2000)).

[75] *See State v. Sanchez-Alfonso*, 352 Or 790, 293 P3d 1011 (2012).

[76] *See id*.

[77] *State v. Lawson*, 352 Or 724, 752, 291 P3d 673 (2012).

The detailed analysis required by trial courts was articulated, for example, in *State v. Sanchez-Alfonso*, where the court discussed the framework to limit the admissibility of expert testimony to that which is supported by the science.[78] There, the state offered the expert testimony of a physician who diagnosed a child victim as having suffered physical abuse and offered an additional conclusion that the abuse was caused by the defendant.[79] On appeal, the Court of Appeals separately considered the two aspects of the physician's diagnosis,[80] and the Oregon Supreme Court agreed that each opinion must meet the criteria for admissibility.[81] Review in the Supreme Court was limited to the opinion that the child had been abused by the defendant, and the court found that the opinion was inadmissible under OEC 702.[82] The court acknowledged that certain medical procedures upon which the physician relied—such as conducting a physical exam, reviewing medical records, and gathering a history—are acceptable methods.[83] The court, however, recognized that the physician's opinion in the case went

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[78] *See Sanchez-Alfonso*, 352 Or at 799.

[79] *Id.* at 792.

[80] *Id.* at 792.

[81] *Id.* at 801 n 10.

[82] *Id.* at 801-02.

[83] *Id.* at 802.

beyond the limits of any conclusion that those methods could draw.[84] The doctor

failed to demonstrate that an accepted methodology exists to support those

conclusions.[85] The court ruled the opinion inadmissible under OEC 702 because

the physician did not establish that the opinion was supported by methodology that

is generally accepted, consistent with recognized guidelines and safeguards, or

supported by research or peer-reviewed literature.[86]

The holding in *Sanchez-Alfonso* requires trial courts to (1) analyze each of

an expert's opinions separately, (2) assess the admissibility of each opinion, and

(3) exclude those opinions that exceed the limits of science. The trial court, here,

did not engage in this analysis.

> **2.   The trial court erred by failing to analyze each of the examiner's proffered opinions and exclude those that exceed the limits of the science.**

The fingerprint examiner in this case offered several conclusions that exceed

the limits of the science. Again, by going beyond the limits of the science, an

examiner suggests that her opinion is conclusive of guilt. Latent fingerprint

analysis does not support that conclusion.

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[84] *Id.*

[85] *Id.*

[86] *Id.*

(a) **The examiner cannot establish that the existing methodology can support the individualization of prints.**

Ms. Willard testified to her methodology and the points of consistency between the latent print and known print. She went beyond the limits of the science, however, when she testified that Ms. Cannon was the source of the latent print found at the scene. She testified that "both prints are made by the same source"[87] and she identified that source as Ms. Cannon:

> Q: So at the time you lifted the print, you had not identified Audrey Cannon - -
>
> A: Correct.
>
> Q: - - the owner of the fingerprint.
>
> A: Yes, that was not written on until I confirmed my identification made the decision that the latent print and the known print were by the same source.[88]

This testimony that professes to "match" an unknown item of evidence to a specific known source is called "individualization"[89] and has been widely criticized because it purports to entirely eliminate the probability that a different individual might be the source of one of the prints. As discussed above, a latent fingerprint

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[87] Tr. 265:20-21.

[88] Tr. 278:15-21.

[89] NAS Report (2009) at 141-42 ("[W]hen a latent print examiner testifies that two impressions 'match,' they are communicating the notion that the prints could not possibly have come from two different individuals.")

examiner cannot eliminate that possibility.[90] As discussed in the NAS Report, "[t]he 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."[91]

Numerous scholars have concluded that claims of individualization are not scientifically supportable.[92] The NAS Report recognizes that "no forensic method other than nuclear DNA analysis has been rigorously shown to have the capacity to consistently and with a high degree of certainty support conclusions about 'individualization' * * *."[93] In 2009, following release of the NAS Report, the International Association for Identification advised all members "to avoid stating their conclusions in absolute terms when dealing with population issues."[94]

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[90] *See*, *supra*, section III(A)(2).

[91] NAS Report (2012) at 43.

[92] *See*, *e.g.*, NIST Report (2012) at 14.

[93] NAS Report (2009) at 87.

[94] Letter from Robert Garrett, NAS Memo to IAI Members to All Members of the International Associations for Identification (Feb. 19, 2009), available at: https://www.theiai.org/current_affairs/nas_memo_20090219.pdf (last visited July 2, 2017).

Thirteen scholars from diverse backgrounds then wrote a consensus statement
warning that "[e]xperience is a legitimate basis for certain kinds of knowledge, but
it is deeply problematic for experience to be the basis for sweeping claims like
individualization."[95] The expert working group on human factors in latent print
identification convened by the National Institute of Science and Technology and
the National Institute of Justice came to the same conclusion in 2012.[96] The
NIST/NIJ expert working group, comprised of leading fingerprint examiners,
researchers, and academics, produced a report after several years of study in which
the experts concluded: "Because empirical evidence and statistical reasoning do
not support a source attribution to the exclusion of all other individuals in the
world, latent print examiners should not report or testify, directly or by implication,
to a source attribution to the exclusion of all others in the world."[97]

The report by the United States Department of Justice recognizes that
"without the support of a robust statistical model to assess the likelihood that a
similar configuration of features could appear in another source, it is inappropriate
for an examiner to state or imply that an identification conclusion would absolutely

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[95] Jennifer L. Mnookin, *et al.*, *The Need for a Research Culture in the Forensic Sciences*, 58 UCLA L. REV. 725, 745 (2011).

[96] NIST Report (2012) at 207.

[97] *Id.*

exclude the possibility that another source could have left a similar looking latent print."[98]

In this case, Ms. Willard's testimony that the prints are from the "same source" went beyond the limits of the methodology. She offered her opinion as to individualization even after she admitted that the latent print was smudged on the left side such that she could not analyze that portion of the print.[99] Without sufficient scientific support, Ms. Willard eliminated the possibility that Ms. Cannon's print differed from the latent print in the area that Ms. Willard could not analyze.

Ms. Willard's testimony suggests that she focused on the consistencies between the prints and paid inadequate attention to the differences.[100] For example, Ms. Willard speculated that a blank spot in the known print where a mark exists in the latent print was not a discrepancy because it was likely due to a difference in applying pressure when taking the known.[101] She also concluded

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[98] DOJ Report at 13.

[99] Tr. 311:15-21.

[100] *C.f.* PCAST Report (2016) at 28 (discussing error in Mayfield case caused by focusing on apparent similarities and paying inadequate attention to differences).

[101] Tr. 309:1-310:19.

without explanation that, although dust could have affected the latent print, "it

didn't."[102]

A statement that two prints could not possibly have come from two different

individuals is a statement implying certainty that simply has no empirical

foundation, even if one assumes that ACE-V is a generally reliable process. The

authors of the PCAST Report recommend that examiners should "report findings

of a proposed identification with clarity and restraint, explaining in each case that

the fact that two samples satisfy a method's criteria for a proposed match does not

mean that the samples are from the same source."[103]

Ms. Willard's opinion that the latent print and known print were made by the

same source (Ms. Cannon) exceeds the limits of the science, and the trial court did

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[102] Tr. 310:20-311:3.

[103] PCAST Report (2016) at 6. *See also* NAS Report (2009) at 142 ("Given the general lack of validity testing for fingerprinting; the relative dearth of difficult proficiency tests; the lack of a statically valid model of fingerprinting; and the lack of validated standards for declaring a match, such claims of absolute, certain confidence in identification are unjustified * * * Therefore, in order to pass scrutiny under Daubert, fingerprint identification experts should exhibit a greater degree of epistemological humility. Claims of 'absolute' and 'positive' identification should be replaced by more modest claims about the meaning and significance of a 'match.'") (quoting J.L. Mnookin, *The Validity of Latent Fingerprint Identification: Confessions of a Fingerprinting Moderate*, LAW, PROBABILITY AND RISK 7:127 (2008)).

not properly exercise its gatekeeping function to ensure the scientific validity of

Ms. Willard's opinion.

In addition, after identifying Ms. Cannon as the source of the latent print and

the known print, Ms. Willard went one step further by making an in-court

identification of Ms. Cannon as the perpetrator and concluding that Ms. Cannon

left the latent print "in Ms. Gortner's house" on the bottle.[104] Ms. Willard's in-

court identification of Ms. Cannon is particularly problematic. Ms. Willard

testified:

> Q: So is the person who lift - - left the fingerprint in
> Ms. Gortner's house that you lifted from the Créme De
> Cassis bottle, is that person present in the courtroom?
>
> A: Yes, she is.
>
> Q: And could you please identify her for the jury?
>
> A: She's sitting at counsel table to his left wearing
> brown, and has dark, just past should length hair, and a
> skirt.[105]

In forensic terms, Ms. Willard testified about an "activity-level

proposition"—Ms. Cannon touched the bottle—rather than a "source-level

proposition."[106] This testimony went beyond the scope of her expertise as a latent

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[104] Tr. 282:2-8.

[105] Tr. 282:2-8.

[106] R. Cook et al., *A Hierarchy of Propositions: Deciding Which Level to Address in Casework,* 38 SCIENCE & JUSTICE 231 (1998).

print examiner. Ms. Willard does not claim any expertise that would allow her to

visually identify Ms. Cannon (as opposed to comparing the details between a latent

print and a known print). Ms. Willard did not witness the crime and had no

personal knowledge to identify Ms. Cannon as the perpetrator. Ms. Willard

purported to identify Ms. Cannon as the source of the latent print, and she then

assumed that the known print came from the woman sitting in the courtroom. Her

identification was not based on personal knowledge under OEC 602 or rationally

based on her own perceptions under OEC 701, as required by *Lawson*.[107]

> **(b)** **The examiner cannot establish that the existing methodology has a zero error rate.**

The error rate of a forensic feature-comparison method is important because,

without it, an opinion that two impressions are similar, or even indistinguishable,

has no probative value.[108] The error rate in science indicates the likelihood of a

coincidental match *or* a human/technical failure, either of which can lead to an

incorrect conclusion.[109] A federal district court magistrate accurately remarked in

an early case on the use of DNA analysis: "Without the probability assessment,

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[107] *See Lawson*, 352 Or at 752.

[108] PCAST Report (2016) at 53.

[109] *Id.* at 51 (discussing the difference between science and law regarding the meaning of "error").

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."[110]

Ms. Willard's testimony allowed the jury to infer a zero error rate when she

testified that the Portland Police Bureau has "never [made] an erroneous or a

mistake in an identification[.]"[111]

Statements suggesting a zero error rate "are not scientifically valid."[112] The

authors of the PCAST Report caution that examiners should never be allowed to

testify to "scientifically indefensible claims such as: 'zero,' 'vanishingly small,'

'essentially zero,' 'negligible,' 'minimal,' or 'microscopic' error rates; '100

percent certainty' or proof 'to a reasonable degree of scientific certainty;'

identification 'to the exclusion of all other sources;' or a chance of error so remote

as to be a 'practical impossibility.'"[113] Experts explain that "[a]ll laboratory tests

and feature-comparison analyses have non-zero error rates, even if an examiner

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[110] *U.S. v. Yee*, 134 FRD 161, 181 (ND Ohio 1991).

[111] Tr. 266:12-14 and 315:23-316:1.

[112] PCAST Report (2016) at 19.

[113] *Id.* at 19. *See also* NAS Report (2009) at 142-43 ("[C]laims that * * * [fingerprint] analyses have zero error rates are not scientifically plausible.").

received a perfect score on a particular performance test involving a limited number of samples."[114]

As discussed above, latent fingerprint analysis has been subjected to only two black-box studies, and each produced a rate of error that is significantly higher than believed by most jurors.[115] One study found that mock jurors estimated that the false positive rate for latent fingerprint analysis is 1 in 5.5 million.[116] In reality, "[o]f the two appropriately designed black-box studies, the larger study (FBI 2011 study) yielded a false positive rate that is unlikely to exceed 1 in 306 conclusive examinations while the other (Miami-Dade 2014 study) yielded a considerably higher false positive rate of 1 in 18."[117] Even "earlier studies, which were not designed as validation studies, also yielded high false positive rates."[118]

The authors of the PCAST Report recommend that experts "inform jurors that (1) only two properly designed studies of the accuracy of latent fingerprint

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[114] PCAST Report (2016) at 30.

[115] *See*, *supra*, at section III(A)(4).

[116] Koehler, J.J., *Intuitive Error Rate Estimates for the Forensic Sciences* (2016), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2817443 (last visited July 2, 2017).

[117] PCAST Report (2016) at 96.

[118] *Id.*

analysis have ever been conducted and (2) these studies found false positive rates that could be as high as 1 in 306 in one study and 1 in 18 in the other study."[119]

Ms. Willard's opinions went far beyond the limits of the known error rates. In particular, Ms. Willard made the mistake of relying upon an experiential error rate to suggest that fingerprint analysis is infallible. She testified that the Portland Police Bureau has never made a mistake on identification.[120] An error rate must be calculated from samples where the answer is known, not from casework where the true answer is unknown.[121] The fallacy in using an experiential error rate is articulated in the PCAST Report: "the expert simply assumed without evidence that every error in casework had come to light."[122]

We now know that the error rate for latent fingerprint analysis is much higher than once thought. Ms. Willard's opinion as to error rate suggests to the fact-finder a greater degree of certainty than supported by the methodology, and the trial court should have exercised its gatekeeping function to properly assess the admissibility of this testimony.

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[119] *Id.*

[120] Tr. 266:12-14, 315:23-316:1.

[121] PCAST Report (2016) at 53.

[122] *Id.*

(c) **The examiner cannot establish that the existing methodology allows her to determine when a print was deposited.**

Ms. Willard testified that she could determine that the latent print was left recently by the lack of dust having settled on the print.[123] Ms. Willard did not establish that the opinion was supported by methodology that is generally accepted, consistent with recognized guidelines and safeguards, or supported by research or peer-reviewed literature. She, instead, based her conclusion on speculation about the way in which dust falls. From practical experience, we all know that different items collect dust in different ways. Moreover, researchers have long-attempted to find a reliable method to determine the age of fingerprints, with little success.[124] Ms. Willard did not testify to any facts that suggest her ability to determine the age of a latent print based solely on visual examination.

The trial court did not properly exercise its gatekeeping function to require the examiner to establish the scientific validity of her opinion.

(d) **The examiner did not establish the use of a blind procedure.**

The examiners in this case did not conduct a "blind" verification process to reduce bias.

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[123] Tr. 303:12-18.

[124] *See, e.g.*, Cadd, S., *et al.*, *Fingerprint Composition and Aging: A Literature Review*, 55 SCIENCE AND JUSTICE 219, 234 (2015).

Widely accepted forensic methods of analysis depend not only on the accurate collection of information, but also upon sound interpretation and objective analysis of the data collected. Although experts in forensic identification fields sometimes testify to their findings with a high degree of certainty, little has been done to guard against the possibility that "an examiner's observations and conclusions will be influenced by extraneous, potentially biasing information."[125] The potential for examiner bias may be reduced through the use of scientific "blinding"—or, reducing the amount of contextual and extraneous information to which the examiner has access during the analytical process. In the latent print field, the potential for bias is recognized.[126] In 2006, Dr. Itiel Dror, a professor of psychology at University College London, conducted a study that revealed the high likelihood of error even among examiners who reviewed their own work.[127] As a part of the study, five fingerprint experts separately received a pair of fingerprints that, five years earlier, they identified as a match. The experts were told that the pair was the one that the FBI used to erroneously identify Brandon Mayfield as the

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[125] D. Michael Risinger, *et al.*, *The Daubert/Kumho Implications of Observer Effects In Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 CAL L REV 1, 9 (2002).

[126] NIST Report (2012) at 43-44.

[127] Dror, *et al.*, *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 FORENSIC SCIENCE INTERNATIONAL 1, 74-78 (2006).

Madrid bomber. Only one of the five experts insisted that the two fingerprints matched. One could not decide. The other three affirmed that no match existed, contradicting the conclusions they had drawn five years earlier.

Reducing contextual information makes a difference. First, blind *administration* can help to reduce bias in the first examiner. The Oregon Supreme Court, in *State v. Lawson*, has already recognized the necessity of "blind administration" in eyewitness identification procedures.[128] The *Lawson* court found that "[i]deally, all identification procedures should be conducted by a blind administrator" since "lineup administrators who know the identity of the suspect can consciously or unconsciously suggest that information to the witness."[129]

In the latent print field, the use of a linear process of analysis, discussed above, is important to reduce bias.[130] In addition, the examiner conducting the fingerprint comparison should not be given contextual information about the crime alleged or suspects in the case.[131] Usually, the danger that contextual information will be introduced arises when laboratory-based examiners communicate with police officers. Ms. Willard, here, actually walked the crime scene with the

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[128] *Lawson*, 352 Or at 779-80.

[129] *Id*. at 741-42.

[130] *See*, *supra*, section III(A)(1).

[131] PCAST Report (2016) at 98-99.

victim.[132] The potential for bias is suggested by the fact that Ms. Willard did not

take elimination prints because she simply accepted the victim's statement that she

had not touched the bottle.[133]

Second, blind *verification* can help to reduce bias in the second (reviewing)

examiner. The print should be given to a separate examiner to be "verified," and

this separate examiner should repeat the identification procedure independently,

without being aware of the first examiner's conclusion.[134] Blind verification helps

to ensure that appropriate conclusions are drawn based on the information alone,

since "[i]f one has expectations about an event, or hypotheses about its cause, one

tends to draw selectively from the available evidence and focus on those items that

confirm the working hypothesis."[135] Blind verification also ensures that the result

is reproducible—that is, "with known probability, different examiners will obtain

the same result, when analyzing the same samples."[136]

Courts in other jurisdictions have recognized the necessity of blind

verification in fingerprint analysis. In *United States v. Mitchell*, a case in which

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[132] Tr. 292:25-293:3.

[133] Tr. 305:25-306:7.

[134] PCAST Report (2016) at 90.

[135] Risinger, *supra* n 125, at 15.

[136] PCAST Report (2016) at 47.

the Third Circuit ultimately affirmed the district court's decision to admit

fingerprint evidence, the court took note of expert testimony from the defense,

which cast "some doubt on the purity of the verification step."[137] That testimony

suggested fingerprint examiners as a profession suffer from an "occupational norm

of unanimity" which "strongly discourages the verifying examiner from

challenging the identification made by the initial examiner."[138] The court in

Mitchell also acknowledged that "the cultural mystique attached to fingerprint

identification may infect the peer review process."[139]

Ms. Willard testified that the second examiner in this case reviewed only the

latent print and the chosen known print. She did not repeat the ACE-V process of

analysis, and, in fact, already knew that the first examiner reached a conclusion of

proposed identification.[140] The second exam was not a verification; it was a

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[137] 365 F3d at 238.

[138] *Id*. at 238-39 (*See also United States v. Llera Plaza*, 188 F Supp 2d 549, 559 (ED Penn 2002) (noting expert testimony that suggests "verification" is a "misnomer," and final stage in which second examiner knows the conclusion reached by first examiner is more aptly described as "ratification")).

[139] *Mitchell*, 365 F3d at 239. *See also* Robert B. Stacey, *Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case* (2005), available at: https://archives.fbi.gov/archives/about-us/lab/forensic-science-communications/fsc/jan2005/special_report/2005_special_report.htm (last visited July 3, 2017).

[140] Tr. 299:6-19.

"rubber stamp" on the conclusions of the first examiner. At trial, the examiner did not offer any information to show that the conclusions were supported by accepted methodology based on blind procedures.

C.   Faulty forensics, including mistaken fingerprint analyses, have proven to be a source of wrongful convictions.

While the Mayfield case, discussed *supra*, might be the most famous recent erroneous fingerprint attribution, there were at least 22 such false attributions in the public record as of 2005.[141] Some were discovered only after conviction and as the result of a later exoneration.

For example, Stephan Cowans spent six years in prison for crimes that he did not commit after two fingerprint analysts mistakenly matched Cowans' print to a latent print found at the scene.[142] The victim, Police Sergeant Gregory Gallagher, was shot twice with his own gun during a struggle. The assailant fled and forced his way into a nearby home, where he left the gun, his sweatshirt, and a mug that he borrowed from the homeowner to drink some water. The victim erroneously identified Cowans from a photo array and a live line-up. Two police department fingerprint analysts then matched a fingerprint on the mug to Cowans. Cowans

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[141] *See* Cole, *supra*, n 5, at 991.

[142] National Registry of Exonerations, Stephan Cowans, available at: http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3127 (last visited July 2, 2017).

was convicted of armed assault and attempted murder, and he was sentenced to 35-50 years in prison. Six years later, DNA tests on the mug, sweatshirt, and gun proved that the items came from one person and that person was not Cowans. The District Attorney informed the court that the purported fingerprint match was a mistake and dismissed all charges against Cowans.

As another example, Beniah Alton Dandridge spent 19 years in prison for a crime that he did not commit after a fingerprint analyst erroneously matched two fingerprints from the scene to Dandridge.[143] The victim, Riley Manning Sr., had been beaten and strangled in his apartment, and police found bloody fingerprints at the scene. Dandridge had worked for Manning, and police requested that the Alabama Bureau of Investigation ("ABI") compare Dandridge's fingerprints to the prints found at the scene. A latent print examiner at ABI testified that she compared two fingerprints from the scene to Dandridge's fingerprints and found 14 points of similarity in one and nine points of similarity in the other. She testified that the minimum standard at ABI to determine a match was nine points of similarity. She also testified that she had been in the field for 25 years, looked at millions of prints, and "no one has ever found two fingerprints of any individual to

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[143] National Registry of Exonerations, Beniah Alton Dandridge, available at: http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=4768 (last visited July 2, 2017).

be the same." Dandridge offered his own expert who testified that the prints did not match, as well as alibi witnesses, but he was convicted and sentenced to life in prison. Eighteen years later, in May 2014, two fingerprint examiners re-examined the prints at the scene and determined that they were left by the victim's son who from the beginning told police that he got blood on three of his fingers when he found his father's body and checked for a pulse. The ABI examiner never compared the latent print to the son's known print. Dandridge's post-conviction team filed a petition seeking to vacate the conviction and pointing out that the ABI examiners used procedures that were later shown to produce errors, including relying on the nine-points-of-similarity standard, failing to make comparisons to others who might have left the prints, and assigning substantial weight to similarities found in certain areas of a fingerprint where prints from different individuals can appear similar when examined in isolation. Dandridge was exonerated in 2015.

Mayfield, Cowans, and Dandridge represent only a sample of the known misattributions based on erroneous latent fingerprint analysis. Logic would dictate that there are numerous other misattributions that will never come to light.

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IV. CONCLUSION

Amici respectfully request that the court instruct trial courts to exercise their gatekeeping function to require that latent fingerprint examiners offer testimony to support the scientific validity of each of their opinions and exclude those opinions that exceed the limits of the science.

Dated: July 12, 2017

Respectfully submitted,

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I certify that I electronically filed the foregoing BRIEF OF *AMICI CURIAE*

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