

STATE OF MARYLAND

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IN THE CIRCUIT COURT

VS.

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FOR BALTIMORE

BRYAN KEITH ROSE

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COUNTY

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Case No. K-06-0545

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**MOTION TO EXCLUDE TESTIMONY OF FORENSIC FINGERPRINT
EXAMINER AND REQUEST FOR A FRYE HEARING**

COMES NOW Defendant, Bryan Keith Rose, by and through undersigned counsel, and files this Motion to exclude the testimony of any forensic fingerprint examiner the State intends to call as a witness in this case. Defendant asks for a hearing on this Motion. At the conclusion of that hearing, Defendant asks the Court to apply the principles from *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923); *Reed v. State*, 283 Md. 374, 391 A.2d 364 (1978) and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) to preclude the admission of any fingerprint evidence.

Presumably the State will rely on the historical judicial acceptance of fingerprint comparison evidence as proof of its validity. However, in a number of fields, courts have discovered that modern scientific inquiries have raised questions about long-accepted assumptions and methods. See e.g. *United States v. Hines*, 55 F.Supp.2d 62, 68-71 (D.Mass. 1999) (limitation on handwriting comparison evidence); *Ramirez v. State*, 801 So.2d 836, 849-52 (Fla. 2001) (toolmark evidence under *Frye* test); *State v. Behn*, 375 N.J. Super. 409, 868 A.2d 319 (2005) (bullet lead analysis). Until recently, fingerprint comparison evidence has generally been accepted without question or critical

review. Unquestioning acceptance does not prove the doctrine's reliability.

The Admissibility of Fingerprint Comparison Evidence Reached Using a Method of Examination Known as "ACE-V".

Counsel reasonably believes that the "ACE-V" (Analysis, Comparison, Evaluation, Verification) method was utilized in this case. See *United States v. Plaza*, 188 F.Supp.2d 549, 551 (E.D. Pa. 2002).¹ It is unknown at the present time if the latent print analysis performed by the examiner was performed prior to or subsequent to an AFIS search.²

In the Analysis stage of ACE-V, an examiner of a latent fingerprint may note the presence of "Galton minutiae" such as ridge endings and bifurcations on the ridge path, the location of other features, such as the core, one or more deltas, and accidental features such as scars. To be useful for subsequent comparison purposes, each of these features has to be spatially located relative to the other features in the same latent print. Coordinates, ridge counts, or a distance/direction can specify locations of the relevant features. Once the examiner has identified key elements in the latent, the examiner turns to the known exemplar. Once both prints have been analyzed, then the examiner begins the comparison stage.

At the evaluation stage, the expert looks at the quality and quantity of

¹ First I described the four fingerprint examination procedures—"analysis," "comparison," "evaluation," and "verification,"-for which "ACE-V" is an acronym: "analysis" by an initial fingerprint examiner of the observably distinctive patterns of a latent print; "comparison" by the examiner of the latent print patterns with those of a rolled print; "evaluation" by the examiner of these compared patterns with a view to determining whether the prints are, or are not, impressions made by the same finger or palm; and "verification" by a second examiner who repeats the analysis, comparison and evaluation steps in order to verify, or not, the initial examiner's finding (Id. at 551)

² AFIS (Automated Fingerprint Identification System) is a database of exemplar prints taken from persons during an arrest.

the comparisons. An important point at this stage is the examiner's attribution of differences between the latent print and the exemplar to explainable, harmless distortions, and inexplicable discrepancies. A single unexplained discrepancy between the latent print and a known exemplar is sufficient to prove conclusively that the exemplar was not the source of the latent print. The *Mitchell* court was concerned about the standards for fingerprint comparison, noting that they were “insubstantial in comparison to the elaborate and exhaustively refined standards found in many scientific and technical disciplines.” *United States v. Mitchell*, 365 F.3d 215, 241 (3rd Cir. 2004).

A fundamental problem in any subjective comparison involves psychological phenomena known as “confirmation bias”, which the FBI found to be a factor in the Brandon Mayfield³ misidentification case. In brief, if the examiner has a prior belief or expectation that two fingerprints will, or will not, match, then two potential psychological biases arise. “Cognitive confirmation bias” is a tendency to seek out and interpret evidence in ways that fit existing beliefs. “Behavioral confirmation bias,” commonly referred to as the self-fulfilling prophecy, is a tendency for people to unwittingly procure support for their beliefs through their own behavior. The danger of confirmation bias affecting an examiner's subjective opinion was rarely discussed in the fingerprint examination literature prior to the FBI's recent report on the Mayfield error.

³ The FBI misidentified Mr. Mayfield as the source of a fingerprint found on evidence in a terrorist bombing in Madrid, Spain.

This phenomenon may cause examiners to overestimate the quality of a latent print, or attribute a discrepancy to an explainable distortion, when they have external reasons to expect a match, and to underestimate the quality of an image or regard an explainable distortion as a discrepancy when they have external reasons to expect a non-match. So long as the criteria is subjective, confirmation bias may be impossible to avoid.

Confirmation bias can play a significant role in distorting test results regardless of the validity of the underlying theory. Evidentiary matter may be presented to forensic scientists in a suggestive manner. See Jonakait, *Forensic Science: The Need for Regulation*, 4 HAV. J. L. & TECH. 109, 160 (1991). The examiner may be given crime scene evidence, autopsy evidence, and a fingerprint exemplar clearly labeled as the suspect's. *Id.* This may be accompanied by a written or oral synopsis of the reasons the investigator believes the suspect is guilty or a description of a suspect's prior record for similar offenses. *Id.* This suggestiveness, coupled with the understandable prosecution sympathies of many examiners may lead the examiner to subconsciously attribute more significance to ridge details that support the police theory-of-the-case and attribute details that conflict with the police theory to explainable distortion.

In its report on the Mayfield error, the FBI also concluded that “the inherent pressures of working on an extremely high-profile case ... was thought to have influenced the examiner's initial judgment and subsequent examination.” Stacey, *A Report on the Erroneous Fingerprint Individualization in*

the Madrid Train Bombing Case, 54:6 J. FORENSIC IDENTIFICATION 706, 713 (2004)(hereinafter “Stacey”). It concluded that the verification process was tainted by the “inherent pressure of such a high-profile case” and recommended a new quality assurance rule regarding high profile or high-pressure cases. *Id.* at 713, 716. In effect, the FBI conceded that there is a problem with the ACE-V method; the likelihood of human error is increased in certain cases, thus a new procedure is needed.

The verification step of ACE-V is vulnerable to subconscious influences, such as confirmation bias, which would prevent the examiner from reaching an independent conclusion. In three mis-identification cases, those of Brandon Mayfield, Stephen Cowans, and Roger Caldwell, the erroneous identification was verified within the respective agencies. Stacey, *supra.* at 713; Thomas, 2 *Police Officers are put on Leave*, BOSTON GLOBE, April 24, 2004, at B1 (police examiners who misidentified the defendant penalized); Starrs, *A Miscue in Fingerprint Identification: Causes and Concern*, 12 POLICE SCI. & ADMIN. 287 (1984) (both prosecution experts IAI certified). The ACE-V verification step did not protect these three men against a misidentification. Even outside verification does not guarantee an independent result. In the Mayfield case, the FBI concluded that the verifying examiners' knowledge of the prior identification made by a highly respected examiner was a factor in the error. Stacey, *supra.* at 713.

In the Mayfield, Cowans, and Caldwell cases mentioned above, the examiner's result was also reviewed and verified by defense experts. Stacey,

supra. at 713 (court-appointed expert); Weber & Rothstein, *Man Freed after 6 Years: Evidence was Flawed*, BOSTON HERALD, Jan. 24, 2004, at 4 (two defense experts); Starrs, *A Miscue in Fingerprint Identification: Causes and Concern*, 12 POLICE SCI. & ADMIN. 287 (1984) (IAI certified defense expert). In the wake of the Mayfield error, the FBI has recommended blind verification in “designated” cases. Stacey, *supra.* at 715. This recommendation must be a condition of admissibility of fingerprint evidence. The verification step of ACE-V does not provide sufficient protection for a criminal defendant against a false identification. Blind verification is necessary, not just in “designated cases.” but in all cases.

The error rate present in fingerprint comparisons is unknown. Subjective judgments are an inherent part of ACE-V. It is a rare case where there is sufficient external evidence to show that a fingerprint comparison is unquestionably wrong. Cowan's case depended on the fortuity of exculpatory DNA evidence. Mayfield's case depended on the insistence of the Spanish authorities that the FBI had made an error. Absent a serious critical examination of fingerprint comparisons, the true error rate is, at best, unknown.⁴

⁴ A Minnesota man was acquitted after a misidentification error was uncovered during the trial of a co-defendant. *State v. Caldwell*, 322 N.W.2d 574 (Minn. 1982) (11 matching ridge characteristics).

Latent print experts retracted an identification made of an Arizona man in a 1988 sexual assault case. *Cooper v. Dupnik*, 963 F.2d 1220 (9th Cir. 1992); Starrs, *More Saltimbancos on the Loose? Fingerprint Experts Caught in a World of Error*, 12 Sci. Sleuthing News 1, 1-6 (1988).

John Trogen, a North Carolina examiner, was found to have made three erroneous identification in the mid-1985. See Starrs, *More Saltimbancos on the Loose? Fingerprint Experts Caught in a World of Error*, 12 Sci. Sleuthing News 1, 1-6 (1988); Cole, *More than Zero: Accounting for Error in Latent Fingerprint Identification*, 95:3 J. CRIM. L & CRIMINOLOGY 985, 1001-1016 (2005) (and newspaper articles cited therein).

The United Kingdom admitted an misidentification in a 1991 sexual assault case and in a 1996 burglary case. Grey,

As noted above, it is only recently that defense counsel have begun to seriously challenge fingerprint evidence, often with the aid of new forensic methods, such as DNA that can provide powerful exculpatory evidence. More and more instances of fingerprint identification errors are coming to the fore. Here, as in areas such as eyewitness identification, bullet lead analysis, hair comparisons, and handwriting comparisons, scientific research is increasingly showing that seemingly solid evidence rests on shaky foundations.

Yard in Fingerprint Blunder, LONDON SUNDAY TIMES, April 6, 1997, at 4.

In 1991, Byron Mitchell was convicted in a Pennsylvania robbery case. *United States v. Mitchell*, 365 F.3d 215, 220 (3rd Cir. 2004). As noted by Mr. Meagher, the FBI sent copies of the latent print and Mitchell's exemplar to laboratories in all 50 states and the District of Columbia. Nine laboratories reported that they could not verify the FBI's identification. The FBI then re-sent to those nine laboratories enlargements of the latent prints, with its points of comparison marked. The laboratories then reported agreement with the FBI. See also *United States v. Mitchell*, 365 F.3d 215, 223-24 (3rd Cir. 2004). Mitchell was ultimately convicted, but a 20% disagreement rate in the initial survey is a matter for concern.

The FBI and Illinois State Police uncovered a misidentification in a murder case in 1994. Higgins, *Fingerprint Evidence Put on Trial*, CHI. TRIB., Feb. 25, 2002, at 1.

An English Court quashed disputed fingerprint evidence in a 1998 IRA bombing case. Woffinden, *Thumbs Down*, GUARDIAN, Jan. 12, 1999, at 17; Woffinden, *The Case of the Missing Thumbprint*, 12 NEW STATESMAN 28 (Jan. 8, 1999)

Shirley McKie, a Scottish police detective, was misidentified as the source of a fingerprint found at a crime scene in 1997. See Jofre, *Falsely Fingered*, GUARDIAN, July 9, 2001, at 16; Specter, *Do Fingerprints Lie?*, NEW YORKER, May 27, 2002, at 96.

Richard Jackson, a Pennsylvania man, was falsely convicted of murder based on a flawed fingerprint identification in 1998; the error was uncovered, in part, by the FBI. Janco, *Release of Convicted Killer is Sought*, PHILA. INQUIRER, NOV. 24, 1999, at B1; Barnard, *Convicted in Slaying, Man Wins Freedom: An FBI Investigation Found that Fingerprints at Murder Scene Were Not those of Richard Jackson*, PHILA. INQUIRER, Dec. 14, 1999, at B1.

Kathleen Hatfield was misidentified as the corpse found by Las Vegas police in 2002; she turned up alive after the body had been sent to her family for burial. Coit, *Santa Rosa woman identified as Vegas slaying victim turns up alive*, THE PRESS DEMOCRAT, Sept 13, 2002, at A1.

A Utah man was misidentified in a murder case by the Chair of the IAI Latent Print Certification board; the examiner died shortly thereafter in a laboratory accident. Vigh, *Evidence Bungled in Slaying*, SALT LAKE TRIB., Feb. 19, 2003, at D1.

The misidentification of Stephen Cowans in the shooting of a Boston police officer was uncovered in early 2004. See e.g. Saltzman & Daniel, *Man freed in 1997 shooting of officer*, BOSTON GLOBE, Jan. 24, 2004, at A1.

Finally, Brandon Mayfield's misidentification by three senior FBI examiners, and an outside court-appointed expert, is the most recent misidentification case. See Stacey, *supra*.

The ACE-V “Methodology” Describes, But Does Not Establish, the Reliability or Validity of General Latent Fingerprint Identification Practices.

“ACE-V” (“Analysis, Comparison, Evaluation – Verification”) is an acronym rather than a methodology. Sandy L. Zabell, *Fingerprint Evidence*, 13 J. L. & POL’Y 143, 178 (2005). Its accuracy could be measured by testing experienced examiners comparing pairs of prints in which the true donor is known. To reflect “real world” conditions, this experiment would use latent fingerprints of the range, types and difficulty found in typical case work, examiners would be representative of the range of training, experience and working conditions of those in the field, and the pairings should sample the range of conclusions typically offered by examiners.

No such study has been conducted. After nearly a century of practice, no properly designed, controlled, and conducted study of the accuracy of latent print individualizations exists. Lyn Haber and Ralph Norman Haber, *Error Rates for Human Fingerprint Examiners*, in AUTOMATIC FINGERPRINT RECOGNITION SYSTEMS 331 (N. K. Ratha and R. Bolle eds., 2004). The absence of such studies was stated in open court in the *Daubert* hearing in *US. v. Mitchell* in 1999, and has been recognized by courts. *United States v. Llera Plaza (Llera Plaza I)*, 179 F. Supp. 2d 492, 506 (E.D. Pa. 2002) (vacated and withdrawn) (“On the record made in *Mitchell*, the government had little success in identifying scientific testing that tended to establish the reliability of fingerprint identifications”); *United States v. Llera Plaza (Llera Plaza II)*, 188 F. Supp. 2d 549, 565 (E.D. Pa. 2002) (“But on the present record I conclude that

the proficiency tests are less demanding than they should be. To the extent that this is the case, it would appear that the tests can be of little assistance in providing the test makers with a discriminating measure of the relative competence of the test takers.”); United States v. Crisp, 324 F.3d. 261, 273-274 (4th Cir. 2003) (Michael, J., dissenting) (“The government did not offer any record of testing on the reliability of fingerprint identification Indeed it appears that there has not been sufficient critical testing to determine the scientific validity of the technique The government did not introduce studies or testing that would show that fingerprint identification is based on reliable principles or methods.”); United States v. Sullivan, 246 F. Supp. 2d 700, 704 (E.D. Ky. 2003) (“The court further finds that, while the ACE-V methodology appears to be amenable to testing, such testing has not yet been performed.”). As one federal appellate judge remarked, “The government has had ten years to comply with *Daubert*. It should not be given a pass in this case.” United States v. Crisp, 324 F.3d 261, 272 (4th Cir. 2003) (Michael, J., dissenting.)

Latent Fingerprint Examiners Purport To Individualize Latent Prints Based On Ridge Characteristics Without Any Population Studies Determining the Frequency of These Characteristics.

Latent print examiners are mandated by their professional guidelines to phrase all conclusions that implicate the defendant as “individualizations.”⁵ “Individualization” inevitably implies the existence of studies as to the frequency of the various ridge details in various populations, or how else would

⁵ http://www.swgfast.org/Standards_for_Conclusions_ver_1_0.pdf (mandating that latent print examiners are permitted to testify to only three possible conclusions: individualization, inconclusive, or exclusion.)

the examiner know that the appearance of certain consistent ridge details between a latent and a known print warrants the conclusion that the potential donor pool has been reduced to one? This is, of course, how forensic DNA analysts can generate estimates of the size of the potential donor pool of DNA profiles. The process of generating, refining and demonstrating the accuracy of these estimates required studies, presentations and scrutiny by peers, and the establishment of professional standards.

Conclusions of latent fingerprint individualization do not rest upon such studies because none have been conducted. Instead, latent print 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. They are supposed to determine sufficiency based on “training to competency,”⁶ but no one has any basis from which to intuit such a judgment. See Zabell, *Fingerprint Evidence, supra*, at 155-156.

Every Latent Print Examiner Determines For Themselves How Much Similarity Is “Sufficient” to Individualize A Print

The claim of “individualization” rests upon the concept of “sufficiency.” Latent print examiners claim that they can effect conclusions of “individualization” when “two friction ridge impressions contain sufficient quality (clarity) and quantity of friction ridge detail in agreement.” Scientific

⁶ Scientific Working Group on Friction Ridge Analysis Study and Technology, Friction Ridge Examination Methodology for Latent Print Examiners, § 3.3.1 (“Individualization occurs when a latent print examiner, trained to competency, determines that two friction ridge impressions originated from the same source, to the exclusion of all others.”)

“Sufficiency” according to practitioner guidelines, “is the examiner's determination that adequate unique details of the friction skin source area are revealed in the impression.” *Id.* § 1.5.

The best that the US latent fingerprint profession can produce is that a latent fingerprint analyst “knows it when he or she sees it.” Reliability is ensured through “verification” by another analyst who, too, knows it when she sees it. How can the validity of a “method” predicated on standards intrinsic to the individual examiner?

Even “verification” by latent fingerprint examiners of every “individualization” departs from basic scientific principles. In “verification,” another examiner, often a supervisor, from the same agency “verifies” the work of the examiner. Not only is this done knowing who made the identification, it is done knowing who the suspect is, as exemplar print cards typically show the identity of the person whose prints are on the card, and has more accurately been characterized as “ratification.” United States v. Llera-Plaza (Llera-Plaza II), 188 F. Supp. 2d 549, 559 (E.D. Pa. 2002) (“As to ACE-V itself, Dr. Haber offered the thought that “verification” was a misnomer for the final stage: a procedure in which a second fingerprint examiner knows the result arrived at by a previous examiner, and is asked to go over the same ground, would be better described as “ratification.”)

Existing Data Suggest Fingerprint Examinations have a Discernible Error Rate.

The existing proficiency data is inconsistent with the strength of latent print examiners' testimony as currently given, namely that when a conclusion

of individualization has been reached the potential donor pool has been effectively reduced to one, that the error rate is zero. Documented misattributions further undermine latent print examiners' assertion that their error rate is zero.

Conclusion

The cases of erroneous latent fingerprint identifications indisputably establishes that there is a substantial error rate in fingerprint comparisons. Fingerprint examiners have the ability but not the desire to calculate error rates. There is no scientific basis for fingerprint examiners to opine as to “individualization” or “matches.” Under *Frye* and *Daubert*, no length of history or amount of veneration is a substitute for scientific validation. Consequently, the Defendant asks the Court to apply the principles from *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923); *Reed v. State*, 283 Md. 374, 391 A.2d 364 (1978) and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and preclude the admission of any and all fingerprint evidence.

WHEREFORE, the Defendant respectfully requests that this Honorable Court:

1. Preclude the introduction of any fingerprint evidence;
2. Hold a hearing on this motion; and
3. Grant such additional relief as the nature of this case may require.

Respectfully submitted,

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POINTS AND AUTHORITIES

Beck v. Alabama, 447 U.S. 625, 637-38, 100 S.Ct. 2382, 2389-90, 65 L.Ed.2d 392(1980).
Brady v. Maryland 373 US 83 (1963).
Cole v. State, 378 Md. 42 (2003)
Eddings v. Oklahoma, 455 U.S.104, 118, 102 S.Ct. 869, 878, 71 L.Ed.2d 1 (1982)
Gardner v. Florida, 430 U.S. 349, 357-58, 97 S.Ct. 1197, 1204, 51 L.Ed.2d 393 (1977)
Lockett v. Ohio, 438 U.S. 586, 604, 98 S.Ct. 2954, 2964, 57 L.Ed.2d 973 (1978)
Woodson v. North Carolina, 428 U.S. 280, 305, 96 S.Ct. 2978, 2991, 49 L.Ed.2d 944 (1976)
Maryland Declaration of Rights Articles 16, 21, 23, 24, and 25.
United States Constitution, Amendments V, VI VIII, XIV.
Maryland Rule 4-263

CERTIFICATE OF SERVICE

I HEREBY CERTIFY on this — day of March 2007, that a copy of the foregoing motion was hand delivered to the Office of the State’s Attorney for Baltimore County, County Courts Building, 401 Bosley Ave., Towson, MD 20755

Patrick E. Kent

STATE OF MARYLAND

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IN THE CIRCUIT COURT

VS.

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FOR BALTIMORE

BRYAN KEITH ROSE

*

COUNTY

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Case No. K-06-0545

* * * * *

ORDER

This matter having come before the Court upon Defendant's Motion, it is this ___ day of March, 2007, by the Circuit Court for Baltimore County, Maryland, hereby

Ordered that the State is precluded from introducing any fingerprint evidence in the above captioned case.

JUDGE

