

THE ACE-V METHOD - RELIABLE OR ACCURATE?

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SECTION I – INTRODUCTION

Fingerprint identification through expert testimony has been used within the American legal and Criminal Justice System for more than 100 years.¹ Its supporters “maintain that the identification [or examination] is sound,”² infallible,³ and refer to it as the “gold standard of human identification.”⁴ “This widespread belief helps explain why the defense . . . loses over [ninety] percent of the trials at which the prosecution present an examiner’s testimony to a fingerprint match.”⁵

However, as the twentieth century neared its end, fingerprint identification came under attack regarding its admissibility and validity inside courtrooms.⁶ “[S]everal high-profile cases . . . highlighted the fact that human errors can occur” because any analytical process of matching can and will contribute to error and misidentification.⁷ Yet, “[m]ost members of the general public firmly believe fingerprint examiners’ claim that they can accurately match crime scene impressions with the known fingerprints of defendants.”⁸ Even courts and attorneys still continue to accept that fingerprint examination is a clear and convincing technique for individual identification or elimination.⁹ However, should they ideally sit-by and allow for this type of testimony and opinion to determine guilt or

¹ See NAT’L INSTITUTE OF JUSTICE, *LATENT PRINT EXAMINATION AND HUMAN FACTORS: IMPROVING THE PRACTICE THROUGH A SYSTEMS APPROACH* 7 (2012) (citing U.S. DEP’T OF JUSTICE, *THE FINGERPRINT SOURCEBOOK* (Nat’l Institute of Justice, 2011); SIMON COLE, *SUSPECT IDENTITIES: A HISTORY OF FINGERPRINTING AND CRIMINAL IDENTIFICATION* (Harvard Univ. Press, 2001)).

² Kristin Romandetti, *Recognizing And Responding To A Problem With The Admissibility Of Fingerprint Evidence Under Daubert*, 45 JURIMETRICS 41, 42 (2005) (citing 1 PAUL C. GIANNELLI & EDWARD J. IMWINKELREID, *SCIENTIFIC EVIDENCE* 741 (3d ed., 2003)).

³ See Simon A. Cole, *More Than Zero: Accounting For Error In Latent Fingerprint Identification*, 95 J. OF CRIM. LAW & CRIMINOLOGY 985, 987 (2005) (citing FED. BUREAU OF INVESTIGATION, *THE SCIENCE OF FINGERPRINTS: CLASSIFICATIONS AND USES* 5 (1985)).

⁴ Sandy Zabell, *Fingerprint Evidence*, 13 J.L. POL’Y 143 (2005).

⁵ Michael Cherry, et al., *Another “View” Of Fingerprint Evidence*, 94 JUDICATURE 306, 306 (2011).

⁶ See Romandetti, *supra* note 2, at 42 (citing *United States v. Daubert*, 509 U.S. 579, 592-93 (1993)).

⁷ NAT’L INSTITUTE OF JUSTICE, *supra* note 1, at 7 (citing B. Leveson, *Expert Evidence In Criminal Court—The Problem in ADDRESS TO THE FORENSIC SCIENCE SOCIETY* (Univ. of London, Nov. 18, 2010)).

⁸ Cherry, *supra* note 5, at 306.

⁹ See *infra* Section V.B., p. 17.

innocence? *If an individual truly looks into the Fingerprint Examination process it should become clear that fingerprint identification, using the ACE-V method, could be the biggest fallacy ever allowed inside the criminal justice system.*

SECTION II. – OUTLINE

This article begins with Section III., an explanation of fingerprints and their general nature, meaning what makes a fingerprint and how it's identified. It then proceeds onto Section IV. the examination process, outlining how examiners match, identify, or exclude an individual as a suspect by comparing latent prints to full fingerprints.¹⁰ Section V. will then look at the issues involved in fingerprint examination, which is generally based upon the subjective science (or lack of science) used for examination.

Section VI. will then discuss the courts' view and the admissibility of fingerprint examination. The idea here is to understand the limitations, if any, placed on fingerprint testimony and identification when presented with this type of evidentiary proof. Section VII. concludes the article by indicating how the possible and potential fallacies found in fingerprint examination and identification can be addressed within a criminal matter.

SECTION III. – WHAT IS A FINGERPRINT?

Fingerprints that are left at or on crime scenes are generally referred to as “latent prints,” which can theoretically be left by the palms or soles of an individual's hands or feet.¹¹ Fingerprints (latent or otherwise) will not appear unless there is a “transfer of material[] (such as amino acids, proteins, polypeptides, and salts) to the surface” of

¹⁰ See *supra* Section I., pp. 2-4 (explaining in more detail the differences between fingerprints and latent prints).

¹¹ NAT'L INSTITUTE OF JUSTICE, *supra* note 1, at 7.

something.¹² To better understand how the examination process works it is best to first identify the morphology of a fingerprint.

SECTION III.A. – THE FULL FINGERPRINT

Fingerprints are simply the “reproductions of the ridged skin surface of the fingers . . . [which] result[] from the transfer of oil or other matter to the [touched] surface”¹³ (i.e. impressions left behind by the lines found on our skin, particularly found on the palm of our hands and feet). In fact, “[t]he outer morphology of the friction ridge skin is a direct reflection of its function,” which allows for “the hands and feet to grasp surfaces firmly[] and the creases allow the skin to flex.”¹⁴ “The ridges on the surface of the fingers and palms form before birth, during the third and fourth months of gestation, [and o]nce the pattern develops, it is *widely believed* that the ‘position of the ridge characteristics relative to each other remains constant’ throughout the individual’s life.”¹⁵

Ridges, creases, mature scars, warts, wrinkles, blisters, cuts, and calluses all have or may impact the ridge skin.¹⁶ The outer layer of skin is maintained by its morphology or increased cell production through cell communication.¹⁷ In essence, the entire body and its molecular structure are in constant communication with one another in order to provide proper cell division and replacement.¹⁸ “Superficial damage to the outer layer of

¹² *Id.*

¹³ Romandetti, *supra* note 2, at 43 (quoting DAVID A. STONEY, MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY 372 (David L. Faigman et al. eds., 3rd ed. 2002)).

¹⁴ U.S. DEP’T OF JUSTICE, THE FINGERPRINT SOURCEBOOK Ch. 2, 3 (Nat’l Institute of Justice, 2011).

¹⁵ Romandetti, *supra* note 2, at 43. *Emphasis added.*

¹⁶ See U.S. DEP’T OF JUSTICE, *supra* note 14, at 3 (indicating that skin is comprised of three layers epidermis, outer layer of skin; dermis, connective tissue supporting the epidermis; and hypodermis, loose connective tissue containing fat cells. All serve a purpose for function and development); *see id.* at 3-4.

¹⁷ *See id.* at 16.

¹⁸ *See id.* at 4-16.

the skin may result in a temporary scar[; however, o]nly a deep injury to the lower layer of the skin [will] result in a permanent scar,” which affects the ridge skin patterns.¹⁹

Even though the skin will generally maintain the same identical patterns within the friction ridge skin throughout the life of an individual there are subtle changes occurring to the ridge skin as a person ages.²⁰ As the skin ages its arrangement (or the position of ridge-skin) is said to remain the same,²¹ yet the skin tends to flatten (making the ridge-skin “less sharp”) becoming flaccid or wrinkled as the person ages.²² Further, the ridge patterns will remain on an individual even after death.²³

“Fingerprints are classified by analyzing differences between [the] recurring pattern types, down to the shape and size of pores,” which all modify the ridge skin impressions provided in a fingerprint examination.²⁴ Therefore, if needed an examiner may be able to identify (in theory) multiple layers of differences or similarities among numerous impressions or fingerprints provided for the analysis or examination.²⁵

SECTION III.B. – A “LATENT” FINGERPRINT

A “latent print,” on the other hand, is an “unintentional reproduction of the arrangement of ridges on the skin . . . made by the transfer of materials from the skin to the surface.”²⁶ One study has indicated that latent prints on average are only about twenty-two percent of a known print.²⁷ A “latent print” and a “fingerprint” can arguably

¹⁹ *Id.*

²⁰ *See generally, id.* at 16; *see also* Romandetti, *supra* note 2, at 43.

²¹ *See* U.S. DEP’T OF JUSTICE, *supra* note 14, at 16.

²² *See id.* at 21-26 (citing M. OKAJIMA, DERMAL AND EPIDERMAL STRUCTURES OF THE VOLAR SKIN IN DERMATOGLYPHICS—FIFTY YEARS LATER 193 (Wash. D.C., 1979)).

²³ Romandetti, *supra* note 2, at 43.

²⁴ *Id.*

²⁵ *See generally, id.* at 43-44.

²⁶ *See* NAT’L INSTITUTE OF JUSTICE, LATENT PRINT EXAMINATION AND HUMAN FACTORS: IMPROVING THE PRACTICE THROUGH A SYSTEMS APPROACH 1 (2012).

²⁷ *United States v. Baines*, 573 F.3d 979, 982 (10th Cir. 2009).

be recognized as the same; however, within the forensic community it is generally distinguished by a “fingerprint” or palm print because “latent prints” discuss and denotes impressions from various areas of the skin while “fingerprints” are used when spoken more specifically about findings, examinations, and comparisons.²⁸

It is said that a latent print can maintain up to three levels of detail: (1) Ridge Flow, (2) Ridge Path, and (3) Detailed Ridge View,²⁹ which arguably allows for the ability of the examiner to positively match the latent print to a given fingerprint. In the end, a latent fingerprint is generally and simply a partial, smudged, or otherwise distorted print, which provides another layer of difficulty during comparison.³⁰

SECTION IV. – DIFFERENTIATING FINGERPRINTS

Proponents of fingerprint identification use uniqueness to verify an examiner’s findings, and these findings are based upon a process that utilizes subjective observations that identify, *with a high degree of certainty*, differences between known and unknown prints.³¹ Uniqueness is essential for an examiner to maintain their claim of expertise; however, it is only slightly relevant to the necessary question: “is the examination process reliable or accurate?”³² This will be discussed in detail; however, let’s first determine how an examiner compares and analyzes two prints to determine similarities and differences.

The analysis commonly used involves “experienced-based comparisons between the impression left by the ridge structures of . . . hand . . . surfaces” (the latent print) and

²⁸ See generally, NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 1.

²⁹ See *Baines*, 573 F.3d at 982-83; see also *infra* Section IV.A., p. 7; see generally, *United States v. Aman*, 748 F. Supp. 2d 531, 539 (E.D. Va. 2010).

³⁰ See Simon A. Cole, *More Than Zero: Accounting For Error In Latent Fingerprint Identification*, 95 J. CRIM. LAW & CRIMINOLOGY 985, 991 (2005).

³¹ See Romandetti, *supra* note 2, at 44-45. *Emphasis added*.

³² Simon A. Cole, *Is Fingerprint Identification Valid? Rhetorics of Reliability In Fingerprint Proponents’ Discourse*, 18 LAW & POL’Y 109, 111 (2006).

a secondary (full) fingerprint.³³ This type of “analysis uses a method for assessing ‘individualization’—the conclusion that a [fingerprint] . . . comes from a single unambiguous source,” (i.e. they are unique).³⁴ Moreover, because prints come from the friction ridge area of the skin on the hands or feet, latent print analysis or examination can be referred to as friction ridge analysis.³⁵ In most cases, forensic examiners use a subjective method in order to perform an examination process called “Analysis, Comparison, Evaluation, and Verification,” also known as the “ACE-V” method.³⁶ The ACE-V method has been used among fingerprint examiners since 1959.³⁷

SECTION IV.A. – THE ACE-V METHOD

The “Analysis [phase] is the assessment of a print as it appears on the substrate,” which “proceeds by systematically separating the impression into its various components.”³⁸ This is also the initial examination of the impression and where the examiner will gather “information . . . to decide whether it is useful for comparison.”³⁹

[T]he examiner considers three levels of detail in the impression[:] . . . Level I Detail (L1D) . . . [the] ridge flow, [which is the] pattern type in a finger or palm such as a loop, whorl, or arch formation . . . [or] other information such as relative curvature . . . Level II Detail (L2D) . . . [the] ridge path . . . includes . . . ridge endings, bifurcations, or dots . . . [or] absence of minutiae in an area (called an “open field”) can be significant . . . Level III Detail (L3D) . . . [the] “ridge shapes” . . . include the edges of ridges (which may appear indented or protruded) and pores (the location of the center of the pore, not the size or shape, which can be

³³ NAT’L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 136 (Nat’l Academies Press, 2009).

³⁴ *Id.* (explaining that this method is similar to other methods of pattern recognition, i.e. footwear and tire impression, tool-marks, or handwriting analysis).

³⁵ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 1.

³⁶ Romandetti, *supra* note 2, at 44 (citing Andre A. Moenssens, *Fingerprint Identification: A Valid, Reliable “Forensic Science”?*, 18 CRIM. JUST. 30, 33 (2003)).

³⁷ See NAT’L RESEARCH COUNCIL, *supra* note 33, at 137.

³⁸ U.S. DEP’T OF JUSTICE, THE FINGERPRINT SOURCEBOOK Ch. 9, 13 (Nat’l Institute of Justice, 2011).

³⁹ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 4.

highly variable within a source).⁴⁰

Once the phase is complete, “the examiner judges whether the impression is suitable for a [C]omparison.”⁴¹ Comparison is “the direct or side-by-side [examination] of friction ridge details to determine whether the details in two prints are in agreement based upon similarity, sequence, and spatial relationship.”⁴² When “the examiner finds disagreement with respect to the target group that is too extensive to be the result of [a] distortion in the Analysis phase, the examiner will exclude . . . the [fingerprint] as the source of the latent.”⁴³

Furthermore, “because each independent touching . . . produces a unique print with a variation in appearance, comparative measurement tolerance must be considered during the [C]omparison phase.”⁴⁴ Therefore, the less clear or distorted the print is the more details the examiner requires “when making an agreement or disagreement among the comparisons.”⁴⁵ Further, if there are comparable sets of Level I Detail features between prints then a side-by-side comparison of Level II Detail and possibly Level III Detail should also be performed.⁴⁶ In the end, if the agreement between comparisons satisfies the examiners *threshold* (the appropriate number of similarities between the prints) then he or she proceeds onto the Evaluation phase.⁴⁷

“Evaluation is the formulation of a conclusion based upon analysis and

⁴⁰ *Id.* at 4-5 (citing A. Roddy & J. Stosz, *Finger Features—Statistical Analysis And System Performances Estimates in 85 NO. 9 PROCEEDINGS OF THE IEEE*, 1390 – 1421 (1997); S. Richmond, *Do Fingerprint Ridges And Characteristics Within Ridges Change With Pressure?* in *FORENSIC SERVICES* (2004)); see also *supra* Section III.A., pp. 4-6.

⁴¹ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 5.

⁴² U.S. DEP’T OF JUSTICE, *supra* note 38, at 13.

⁴³ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 5.

⁴⁴ U.S. DEP’T OF JUSTICE, *supra* note 38, at 13.

⁴⁵ *Id.*

⁴⁶ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 6.

⁴⁷ *See id. Emphasis Added.*

comparison of friction ridge skin.”⁴⁸ The Evaluation phase is in essence a review of the previous phases;⁴⁹ however, an ultimate decision regarding source attribution is made during this phase.⁵⁰ In fact, one of three decisions will be made: (1) an individualization or identification; (2) categorically excluding the latent print by determining there is no match; or (3) there is inadequate information to warrant a conclusion making the comparison inconclusive,⁵¹ also known as exclusive.⁵² It should be noted that an examiner can exclude a print based solely on Level I Detail; however, that is not true for finding an attribution between prints.⁵³

Finally, “Verification is the independent examination by [second] qualified examiner resulting in the same conclusion” using the ACE-V method.⁵⁴ This procedure varies among forensic examiners ranging from extremes where a second examiner has the first examiner’s work and conclusion to complete the secondary examination and where the second examiner performs the examination completely blind and independent of the first examination.⁵⁵ The latter has been approved and recommended by the U.S. Department of Justice (hereinafter known as “DOJ”) as the proper way to perform the Verification phase of the ACE-V method.⁵⁶ The whole purpose of this is to maintain order and reach an unbiased and uninfluenced conclusion.⁵⁷

⁴⁸ U.S. DEP’T OF JUSTICE, *supra* note 38, at 13 (citing SWGFAST, FRICTION RIDGE EXAMINATION METHODOLOGY FOR LATENT PRINT EXAMINERS 3 (2002a), available at http://onin.com/fp/lp_exam_methodology.pdf (last visited April 1, 2014)).

⁴⁹ *See generally, id.* at 13-14.

⁵⁰ *See id.* at 13; *see also* NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 7.

⁵¹ *See* NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 7.

⁵² *See* U.S. DEP’T OF JUSTICE, 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 9 (June 2011).

⁵³ *See id.* at 10.

⁵⁴ U.S. DEP’T OF JUSTICE, *supra* note 38, at 17 (citing SWGFAST, *supra* note 48, at 4).

⁵⁵ *See* NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 8.

⁵⁶ *See* U.S. DEP’T OF JUSTICE, *supra* note 38, at 12.

⁵⁷ *See id.* at 17 (SWGFAST, *supra* note 48, at 4).

SECTION IV.B. – APPLYING THE ACE-V METHOD

“The thresholds for these decisions can vary among examiners . . . [where the examiner] report[s] identification if they find a particular number of relatively rare concurring features . . . [while o]thers do not use any fixed numerical standard.”⁵⁸ Further, and as indicated by the DOJ, a “critical task for the examiner during [E]valuation is to determine whether differences in appearance between prints are discrepancies (potentially requiring exclusion) or dissimilarities caused by distortion (potentially allowing for identification or attribution).”⁵⁹

The DOJ also explained that identification occurs when there is sufficient friction ridge detail in agreement, yet it does not clearly elaborate on that point or threshold.⁶⁰ Furthermore, no examiner should be required to have “a minimum number of corresponding feature[s] . . . [but] instead, examiners [should] consider whether the quantity and uniqueness of the information present in both prints is sufficient” to conclude identification.⁶¹ There is actually no specific definition of sufficiency between comparisons, rather examiners simply state that comparisons are sufficient if the examiner determines through his or her subjective interpretation that adequate uniqueness between the details is present.⁶²

SWGFAST has stated that “the types of characteristics relevant to distinguishing one print from all others . . . include[e] bifurcations, ending ridges, and ridge dots[;] . . . if a latent and a known print do not share one such characteristic at the identical location in

⁵⁸ *Id.* at 7.

⁵⁹ *Id.* at 9.

⁶⁰ *See id.* at 8.

⁶¹ *Id.*

⁶² *See* Simon A. Cole, *More Than Zero: Accounting For Error In Latent Fingerprint Identification*, 95 J. CRIM. LAW & CRIMINOLOGY 995 (2005).

the target area . . . [it] should unequivocally exclude the latent print as a match.”⁶³ “The principal axis of variation for latent print identification concerns the difficulty of the comparison, and the principal component of th[at] is the quality and quantity of information available in the unknown print.”⁶⁴

Moreover, examiners “rely heavily on their training and experience to make the required judgments” and conclusions.⁶⁵ “The examiner needs to study a variety of known distorted prints to understand acceptable tolerance for variations in appearances found in prints.”⁶⁶ For example, “variable factors, such as the elasticity of skin and uneven pressure, mean that there will never be perfect congruence between two prints . . . originat[ing] from the same source[;]”⁶⁷ however, examiners still state they are able to determine proper uniqueness and individualization among the not-so-perfect prints.⁶⁸

Because there are numerous factors to consider among the quality and quantity of detail, an examiner should consider the following during examination:

1. Condition of the skin—natural ridge structure (robustness of the ridge structure), consequences of aging, superficial damage to the skin, permanent scars, skin diseases, and masking attempts.
2. Type of residue—natural residue (sweat residue, oily residue, combinations of sweat and oil); other types of residue (blood, paint, etc.); amount of residue (heavy, medium, or light); and where the residue accumulates (top of the ridge, both edges of the ridge, one edge of the ridge, or in the furrows).

⁶³ United States v. Council, 777 F. Supp. 2d 1006, 1011 (E.D. Va. 2011) (citing SWGFAST, *Glossary* (May 8, 2009), available at http://www.swgfast.org/documents/glossary/090508_Glossary_2.0.pdf (last visited Feb 22, 2014)).

⁶⁴ Cole, *supra* note 62, at 989, n. 23 (citing Mark Denbeaux & D. Michael Risinger, *Kumho Tire And Expert Reliability: How The Question You Ask Gives The Answer You Get*, 34 SENTON HALL L. REV. 15 (2003)).

⁶⁵ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 8.

⁶⁶ U.S. DEP’T OF JUSTICE, *supra* note 38, at 13.

⁶⁷ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 8.

⁶⁸ See *supra* Section I., p. 1.

3. Mechanics of touch—underlying structures of the hands and feet (bone creates areas of high pressure on the surface of the skin); flexibility of the ridges, furrows, and creases; the distance adjacent ridges can be pushed together or pulled apart during lateral movement; the distance the length of a ridge might be compressed or stretched; the rotation of ridge systems during torsion; and the effect of ridge flow on these factors.
4. Nature of the surface touched—texture (rough or smooth), flexibility (rigid or pliable), shape (flat or curved), condition (clean or dirty), and background colors and patterns.
5. Development technique—chemical signature of the technique and consistency of the chemical signature across the impression.
6. Capture technique—photograph (digital or film) or lifting material (e.g., tape or gelatin lifter).
7. Size of the latent print or the percentage of the surface that is available for comparison.⁶⁹

It is possible and safe to assume that many of the above mentioned factors will not be available to examiners in all cases, which can likely impact the examiner's interpretation and conclusion of the prints examined.

During the examination process the examiner will “not be completely isolated from other phases” because “[t]he human mind is much too complex to only conduct one linear and single application” at a time.⁷⁰ Furthermore, in order to reduce bias, the examiner must resist from using what is found in one print as justification of finding details or connections in the second print.⁷¹ “The examiner [must] base[] decisions made during the examination upon expertise or the knowledge and beliefs from previous training, experience, understanding, and judgments.”⁷²

⁶⁹ NAT'L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 137-38 (Nat'l Academies Press, 2009).

⁷⁰ U.S. DEP'T OF JUSTICE, *supra* note 38, at 14.

⁷¹ *See id.* at 14-15.

⁷² *Id.* at 16.

SECTION V. – FINGERPRINT ISSUES

Fingerprint examination is a process that utilizes scientific and biological development; however, the actual process (i.e. the ACE-V method) is simply an analytical review of two prints, which is based upon a long-standing acceptance within the community, knowledge, and experience of the examiner.⁷³ The fallacies within fingerprint examination begins and ends with the illogical arguments and validations used by the examiners to justify its communal expertise, essentially propelled by our humanistic urge to maintain acceptance among within the public eye.⁷⁴

SECTION V.A. – HUMAN ERROR

The examiner is the ultimate influence and has the biggest affect on the ACE-V method because of his or her inherent human element along with the strong subjective approach used to reach his or her outcome and conclusion.⁷⁵ Consider the elasticity of skin, which maintains uneven pressure; “there will never be perfect congruence between two prints, even if they originate from the same source.”⁷⁶ The examiner, therefore, must determine with his or her knowledge, training, and experience whether there is sufficient agreement between the two prints, which are naturally dissimilar and distorted prior to factoring in the possible exclusion of the prints from matching.⁷⁷ However, as indicated, examiners and proponents of fingerprint examinations state that prints are unique and reliable, making them infallible and the gold standard for identification.⁷⁸ It should become clear in a moment that the uniqueness argument is irrelevant and improper.

⁷³ See *supra* Section IV. through Section IV.A., pp. 5-9.

⁷⁴ See *infra* Section V.B., pp. 15-16.

⁷⁵ See *generally*, NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 8.

⁷⁶ *Id.*

⁷⁷ See *id.*

⁷⁸ See *supra* Section I., p. 1, n. 4-6.

There are professional reports indicating that human factors and errors exist in latent print examination, which are inevitable and will constantly be present.⁷⁹ The community believes that combating those issues can be done by using a more systematic approach in fingerprint examination.⁸⁰ However, the examiner must still rely solely and simply on his or her experience⁸¹ and the ability to create some sort of model to mathematically quantify the variations of shapes found within individual prints.⁸²

Furthermore, the credentials needed to become a fingerprint examination expert vary greatly between agencies, ranging from very detailed study and experience to one to two week courses.⁸³ These credentials cannot really be seen as qualifications, since they are not required and vary; however, there is a certification program offered by the International Association for Identification.⁸⁴ The certification nor any other accreditation requirement is required in order to qualify as a fingerprint examiner, yet certain recommended training requirements have been published, which are used to help ensure adequate qualified examiners within the community.⁸⁵

In 2009 the National Academy of Science (herein after known as “NAS”) indicated that the two quintessential issues with the ACE-V method are possible error and

⁷⁹ See NAT'L INSTITUTE OF JUSTICE, *supra* note 26, at 21.

⁸⁰ *See id.*

⁸¹ *See supra* Section IV.A., pp. 6-9

⁸² *See generally*, Kristin Romandetti, *Recognizing And Responding To A Problem With The Admissibility Of Fingerprint Evidence Under Daubert*, 45 JURISMETRICS 41, 48 (2005).

⁸³ See NAT'L INSTITUTE OF JUSTICE, *supra* note 26, at 164.

⁸⁴ *See* Simon A. Cole, *More Than Zero: Accounting For Error In Latent Fingerprint Identification*, 95 J. CRIM. LAW & CRIMINOLOGY 985, 994 (2005) (citing INT'L ASS'N FOR IDENTIFICATION, LATENT FINGERPRINT CERTIFICATION, *available at* https://www.theiai.org/certifications/latent_print/index.php (last visited on March 25, 2014)).

⁸⁵ See NAT'L INSTITUTE OF JUSTICE, *supra* note 26, at 165-69.

potential for bias.⁸⁶ The bias that is spoken of may not be considered intentional, but it cannot be denied that unconscious environment factors, assumptions, and other mental inputs can and will sway analyses, conclusions and outcomes.⁸⁷ These are natural, human flaws that are common within any decision-making process.⁸⁸

The NAS provided an interesting example of work-place bias: essentially, a “common desire to please others (or avoid conflict) can skew one’s judgment if coworkers or supervisors suggest that they are hoping for, or have reached, a particular outcome.”⁸⁹ The question presented to any individual (forensic or lay) can and will influence the response provided—such as comparing two particular hairs, in photo or in-person line-ups, or fingerprints.⁹⁰

Moreover, “[m]erely following and completing the steps of ACE-V does not” bring about a reliable and accurate conclusion nor does it mean that two individuals coming to the same conclusion of similarity between two prints used the same cognitive processes to reach such an attribution.⁹¹ In fact, any similar conclusion reached by two examiners could be considered and argued a mere likely coincidence because there has been no research or empirical data provided or revealing the legitimacy and accuracy of whole or complete fingerprints, let alone latent or partial prints.⁹²

⁸⁶ See U.S. DEP’T OF JUSTICE, 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 20 (June 2011) (quoting NAT’L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 87-88, 103-06, 136-45 (Nat’l Academies Press, 2009)).

⁸⁷ NAT’L RESEARCH COUNCIL, *supra* note 86, at 122.

⁸⁸ See *id.* (citing M.J. Saks, et al., *Context Effects In Forensic Science: A Review And Application Of The Science Of Science To Crime Laboratory Practice In The United States*, 2 SCI. & JUSTICE 43, 77-90 (2003)).

⁸⁹ *Id.*

⁹⁰ See *id.* at 122-23.

⁹¹ NAT’L INSTITUTE OF JUSTICE, *supra* note 26, at 21.

⁹² Romandetti, *supra* note 82, at 45 (citing DAVID L. FAIGMAN et al., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY § 27-1.0, 347 (3rd ed., 2002)).

SECTION V.B. – VALIDITY OR UNIQUENESS

The validity of fingerprint examination is key to any criminal matter because the United Supreme Court has now mandated it through its opinion in *Daubert v. Merrell Dow Pharmaceuticals*.⁹³ The ultimate question becomes what constitutes reliability or infallibility? The validity of the examination process is important due to the fact that examiners continually and emphatically state that fingerprint examinations are infallible, making them impervious to incorrect results or errors.⁹⁴

“‘Validity’ refers to the ability of a test procedure to measure what it is supposed to measure—its accuracy [while] ‘Reliability’ refers to whether the same results are obtained in each instance in which the test is performed—its consistency.”⁹⁵ Validity includes reliability.⁹⁶ The terms *can* be used interchangeably.⁹⁷ However, reliability does not always include validity.⁹⁸ “A stuck clock, for example, is reliable, but not valid and only accurate twice a day.”⁹⁹ “Accuracy,” on the other hand, refers to “how often a technique or process reach correct or incorrect conclusions.”¹⁰⁰ Therefore, the term accuracy is truly interchangeable with validity, and vice versa.¹⁰¹

⁹³ Simon A. Cole, *Is Fingerprint Identification Valid? Rhetorics Of Reliability In Fingerprint Proponents’ Discourse*, 18 LAW & POL’Y 109, 110 (2006) (quoting *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 590 (1993)).

⁹⁴ See Cole, *supra*, note 84, at 987 (citing Steve Scarbough, *They Keep Putting Fingerprints In Print in WEEKLY DETAIL* (Dec. 17, 2004), available at <http://www.clpex.com/articles/thedetail/100-99/thedetail74.htm>).

⁹⁵ *Id.*

⁹⁶ See Cole, *supra* note 91, at 110.

⁹⁷ See *id.* *Emphasis added.*

⁹⁸ See *id.*

⁹⁹ *Id.*

¹⁰⁰ *Id.* at 111.

¹⁰¹ See *id.* (citing John Thorton, et al., *The General Assumptions And Rationale Of Forensic Identification In Science in THE LAW FORENSIC SCIENCE* (2002)).

Further, performing the ACE-V method in an orderly, logical, and correct fashion does not provide for an automatic accurate or reproducible result.¹⁰² The fingerprint examination community has yet to perform an accuracy or validity study on its process.¹⁰³ This type of study would not indicate whether the testing parameters are correct or incorrect per say, but rather it would provide an accuracy rate.¹⁰⁴

All the while, “the chief evidence in support for latent fingerprint identification remain[s:] . . . law enforcement agencies [have] never seen any two fingerprints alike,” and thus examiners use uniqueness to rule out any possibility of another individual matching the compared too print.¹⁰⁵ This is again the number one fallacy behind the logic used to validate fingerprint examination.¹⁰⁶

Regardless of the uniqueness of individual fingerprints, if a procedure or process produces inaccurate results, a uniqueness argument provides no validation for their possible findings.¹⁰⁷ However, examiners continue to provide opinionated certainties that prints or ridges are actually derived from the same source,¹⁰⁸ luckily examiners are forbidden from offering actual probabilistic opinions in court.¹⁰⁹

¹⁰² U.S. DEP’T OF JUSTICE, 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 9 (June 2011).

¹⁰³ Cole, *supra* note 93, at 110-11.

¹⁰⁴ *See id.* at 111.

¹⁰⁵ Kristin Romandetti, *Recognizing And Responding To A Problem With The Admissibility Of Fingerprint Evidence Under Daubert*, 45 JURIMETRICS 41, 45 (2005) (quoting SIMON A. COLE, SUSPECT IDENTITIES: A HISTORY OF FINGERPRINT AND CRIMINAL IDENTIFICATION 75 (2001)).

¹⁰⁶ *See* Cole, *supra* note 93, at 109-112.

¹⁰⁷ *See id.* at 111.

¹⁰⁸ Lirieka Meintjes-Van Der Walt, *Fingerprint Evidence: Probing Myth And Reality*, 19 S. AFR. J. CRIM. JUST. 152, 162 (2006) (quoting M. Mears & T.M. Day, *The Challenge Of Fingerprint Comparison In The Defense Of A Criminally Charged Client*, 19 GA. ST. U.L. REV. 705, 731, n 46 (2003)).

¹⁰⁹ *See* Simon A. Cole, *More Than Zero: Accounting For Error In Latent Fingerprint Identification*, 95 J. CRIM. LAW & CRIMINOLOGY 985, 992 (2005) (citing Int’l Ass’n For Identification, *Resolution VII*, 29 IDENTIFICATION NEWS 1 (Aug. 1979)).

V.C. - VALIDITY: TESTED OR NOT?

In 2004, the FBI's Quantico, Virginia, fingerprint lab conducted a study using 50,000 fingerprints in its database and compared each one individually to the entire database. The study concluded that the probability of each fingerprint being mistaken for one of the other 49,999 fingerprints was infinitely small: just 1 in 1097. However, the study's author, FBI analyst Stephen Meagher, acknowledged that the study only proved the fundamental premise of fingerprint matching, that each person's fingerprints are unique.¹¹⁰

Experts continue to rely on subjective opinions without any statistical or empirical certainty of whether what they are doing actually and definitively will provide accurate conclusions.¹¹¹ Millions of sets of prints have been examined over the century indicating that no two fingerprints match; however, this is a fundamental misunderstanding of what actually constitutes as a test.¹¹² The only testing being performed by examiners is adversarial, which was not meant to be considered proper as interpreted by the United States Supreme Court.¹¹³

Moreover, it has been reported that if prints have been determined to match, subsequent examiners generally conclude the same findings, i.e. the prints are from the same source, without third-party verification.¹¹⁴ In fact, those studies only determined if the given prints were a possible match, which would then automatically be considered a positive attribution without further examination for specific similarity; if it was found not to be a possible attribution it was automatically excluded.¹¹⁵

¹¹⁰ Drew Newman, *The Limitations Of Fingerprint Identifications*, 22 CRIM. JUST. 36, 38 (2007-08) (citing ANDY COGLAN & JAMES RANDERSON, NEW SCIENTIST (Sept. 19, 2005)).

¹¹¹ See Romandetti, *supra* note 105, at 48.

¹¹² See Cole, *supra* note 93, at 124-25.

¹¹³ See *id.* at 125 (citing United States v. Llera Plaza, 179 F. Supp. 2d 492, 505 (E.D. Pa. 2002)).

¹¹⁴ See *id.*

¹¹⁵ See generally, Cole, *supra* note 109, at 995.

The Scientific Working Group on Friction Ridge Analysis, Study and Technology (hereinafter known as “SWGFAST”) has established standards for fingerprint analysis for more than fifteen years[;] . . . has supported ACE-V, publishing standards governing its application . . . [; and has] consistently concluded that there is no scientific basis for a predetermined number of points of ridge similarity to warrant an identification.”¹¹⁶ The problem is: the fingerprint examiners community just does not know the truth on whether or not the process produces accurate and valid results.¹¹⁷ Therefore, accuracy or possible error within the comparison and identification is and should be the true inquiry,¹¹⁸ yet examiners continue to avoid the question in court and within scientific studies.¹¹⁹

It becomes amusing that “examiners are incapable of expressing error rates, [yet] they nevertheless testify in absolute terms: ‘because the questioned and the known look alike and because each person’s or object’s marks are unique in the world.’”¹²⁰ However, science itself is not exact and never has been.¹²¹ In 2009 the National Academy of Sciences stated that the only forensic method to demonstrate with a high degree of certainty that a connection exists between two sources is nuclear DNA testing.¹²² Even

¹¹⁶ United States v. Aman, 748 F. Supp. 2d 531, 542 (E.D. Va. 2010) (citing SWGFAST, STANDARD FOR THE DOCUMENTATION OF ANALYSIS, COMPARISON, EVALUATION, AND VERIFICATION (ACE-V) (LATENT) (Nov 24, 2012), available at http://www.swgfast.org/documents/documentation/121124_Standard-Documentation-ACE-V_2.0.pdf (last visited Feb 22, 2014)).

¹¹⁷ See generally, *id.*

¹¹⁸ See Cole, *supra* note 93, at 110.

¹¹⁹ See *id.* at 120-21.

¹²⁰ Lirieka Meintjes-Van Der Walt, *Fingerprint Evidence: Probing Myth And Reality*, 19 S. AFR. J. CRIM. JUST. 152, 163 (2006) (citing M. Sakes et al., *Lessons From Law’s Formative Encounters With Forensic Identification Science*, 149 HASTINGS L.J. 1069, 1091, n. 7 (1998)).

¹²¹ See *id.* (citing Saks, *supra* note 120, at 1091, n. 7).

¹²² U.S. DEP’T OF JUSTICE, 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 20 (June 2011) (quoting NAT’L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 87-88, 103-06, 136-45 (Nat’l Academies Press, 2009)).

the National Research Council went as far to recognize that the “zero-percent error rate is ‘not scientifically plausible.’”¹²³

Many studies that are provided for validation regarding fingerprint accuracy in identification has been small in numbers and sizes, which reduces its persuasiveness on the accuracy of the identification method.¹²⁴ In the end, uniqueness brings about the possibility of differentiation between individuals based upon their fingerprints; however, there is no plausible data supporting that the examination process itself brings about a positive and accurate attribution.¹²⁵

SECTION VI. – TRIAL COURT ACCEPTANCE

Because of the issue with accuracy or reliability among examinations, Federal courts today will and can question the admissibility of fingerprint examinations. So too should the jury when presented with such evidence, but first consider whether it should even be entered into the record as evidence.

In order for admission, prosecutor’s presenting fingerprint evidence must overcome the threshold of reliability,¹²⁶ i.e. validity.¹²⁷ In *Daubert*, the court dealt with the gatekeeping of scientific expert testimony; however, later on it expanded the requirement of reliability to non-scientific expert evidence,¹²⁸ which now includes the non-scientific or experienced-based testimony such as fingerprint examination.¹²⁹ Furthermore, when looking at the Federal Rules of Evidence, Rule 702 explains that

¹²³ See *Aman*, 748 F. Supp. 2d at 540 (citing NAT’L RESEARCH COUNCIL, *supra* note 122, at 173).

¹²⁴ See generally, *id.*

¹²⁵ See Sandy L. Zabell, *Fingerprint Evidence*, 13 LAW & POL’Y 143, 164-65 (2005).

¹²⁶ Cole, *supra* note 109, at 998 (citing *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 594 (1993)).

¹²⁷ See *supra* Section V.B., pp. 15-17

¹²⁸ *Id.* at 989 (citing *Kumho Tire v. Carmichael*, 526 U.S. 137 (1999)) (explaining that the checklist provided in *Kumho Tire* was simply advisory, yet many courts use it for determining admissibility).

¹²⁹ See *id.* (citing *Kumho Tire*, 526 U.S. at 151).

expert testimony will be admitted as such “[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue.”¹³⁰ Therefore, the issues, becomes *Daubert*:

[f]our factors . . . [that] are listed for judicial consideration when a judge exercises his or her “gatekeeper” function . . . [which include] (1) General acceptance of the principle or methodology among the relevant community, (2) Has the principle or methodology been tested and validated? (3) Has the methodology or principle been subjected to peer review? (4) What is the known or potential rate of error for the principle or methodology?¹³¹

“There is no study that says the ACE-V method is unreliable [or invalid] and there is no study that say it is reliable.”¹³² Furthermore, the indication of maintaining an error rate of zero is completely incorrect because there have been documented misattributions going back to 1920.¹³³ These misattributions continue to be revealed and challenged even today, yet examiners continue to maintain an infallible standard.¹³⁴

In 2005, and making major headlines, the Brandon Mayfield case brought about a review of the FBI’s fingerprint examination process led by the DOJ.¹³⁵ In May 2004 an Oregon attorney, Brandon Mayfield, was identified as a source from a latent print left on a bag of detonators found in Madrid.¹³⁶ However, Spanish National Police examined the

¹³⁰ See F.R.E. 702 (basing such testimony, and ultimately their conclusion, off the their individual experience, training, skill and education).

¹³¹ Glenn Langenburg, *A Performance Study Of The ACE-V Process: A Pilot Study To Measure The Accuracy, Precision, Reproducibility, Repeatability, And Bias-ability Of Conclusions Resulting From The ACE-V Process*, 59 J. FORENSIC IDENTIFICATION 219, 220 (2009) (explaining that these factors are discretionary).

¹³² *Id.* at 222 (citing *State of Minnesota v. Columbus*, C.A. No. 05-4980, p. 75-82 (2006)).

¹³³ See Simon A. Cole, *Is Fingerprint Identification Valid? Rhetorics Of Reliability In Fingerprint Proponents’ Discourse*, 28 LAW & POL’Y 109, 116 (2006).

¹³⁴ See generally, *id.*; see also Langenburg, *supra* note 131, at 222-23 (indicating that only four studies have been published discussing the reliability of fingerprint evidence); see *id.* at 222-24.

¹³⁵ See Cole, *supra* note 133, at 116; see also U.S. DEP’T OF JUSTICE, *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 1* (June 2011).

¹³⁶ See U.S. DEP’T OF JUSTICE, *supra* note 135, at 1 (indicating in detail the course of events the Mayfield case took, which included how the Spanish National Police concluded the identification to be a negative and the release of Mayfield once the FBI was notified of the independent findings); see also *id.* at 1-4.

fingerprints and concluded that the latent print came from an Algerian source.¹³⁷ This led to a re-review by the FBI, which then led to them withdrawing its identification and confirmation concerning Mayfield as the source of the latent print and released him from custody.¹³⁸ Every circuit within the United States has considered and upheld the reliability of fingerprint identification, many of which continue to do so even in the wake of cases such as Mayfield.¹³⁹

However, there have been at least two cases where the Courts limited or excluded the examiner's testimony regarding identification of a latent fingerprints.¹⁴⁰ Prior to the Mayfield case, the court in *United States v. Ilera Plaza* held that the fingerprint examiner testifying in the case was not allowed to express an opinion on the ultimate issue of whether the defendant was the source of the "latent print."¹⁴¹ In *United States v. Baines*, the court upheld the government's use of fingerprint identification based upon the trial court record, revealing no abuse of discretion by the trial court when allowing the

¹³⁷ *See id.*

¹³⁸ *See id.* (indicating that the identification of Brandon Mayfield as the source of the latent print was not utilized by the ACE-V method per say, but rather by the FBI's Integrated Automated Fingerprint Identification System. It identified 20 possible sources and those were then provided to an examiner to perform a side-by-side comparison followed by a second examiner for verification [i.e. the ACE-V method], and both concluded that Mayfield matched the latent print); *see also id.* at 1-2.

¹³⁹ *Id.* at 20, n. 22 (citing *United States v. John*, 597 F.3d 263, 274-75 (5th Cir. 2010); *United States v. Havvard*, 260 F.3d 597, 601 (7th Cir. 2001); *United States v. Baines*, 573 F.3d 979, 989-92 (10th Cir. 2009); *United States v. Spotted Elk*, 548 F.3d 641, 663 (8th Cir. 2008); *United States v. Vargas*, 471 F.3d 255, 265-66 (1st Cir. 2006)) (determining that the trier of fact could on its own weigh the credibility of the examiner and his conclusions based upon the record and instructions provided by the court); *see also United States v. Abreu*, 406 F.3d 1304, 1307 (11th Cir. 2005); *see also United States v. Mitchell*, 365 F.3d 215, 246 (3d Cir. 2004); *see also United States v. Crisp*, 324 F.3d 261, 268 (4th Cir. 2003); *see also United States v. Rose*, 672 F. Supp. 2d 723, 725-26 (D. Md. 2009) (holding that fingerprint identification was acceptable because of the low rate of error and being accepted within scientific community).

¹⁴⁰ U.S. DEP'T JUSTICE, *supra* note 133, at 20, n 22 (citing *United States v. Zajac*, No. 2:06-CR-00811 (D. Utah, Sept. 13 & 16, 2010); *Maryland v. Rose*, Case No. K06-0545, Mem. Op. at 5-9, 24-25, 28-31 (Balt. Co. Cir. Ct., Oct. 19, 2007)); *see generally*, *United States v. Aman*, 748 F. Supp. 2d 531, 540 (E.D. Va. 2010) (holding that the questionability of the accuracy and opinions provided by fingerprint examiners is appropriate for cross-examination and demeaning the results and opinions of the examiners; however, it did not make the information and testimony inadmissible).

¹⁴¹ *See* Michael Cherry, et al., *Another "View" Of Fingerprint Evidence*, 94 JUDICATURE 306, 307 (2011) (citing *United States v. Llera Plaza*, 188 F. Supp. 2d 549, 551-52 (E.D. Pa. 2002)).

testimony during trial.¹⁴² It further went on to state that “the desirability of research to provide . . . scrutiny and independent verification . . . in assessing the reliability of fingerprint evidence . . . would be ‘all to the good[, b]ut to postpone present in-court utilization of this ‘bedrock forensic identifier’ pending such research would be to make the best the enemy of the good.”¹⁴³ In the end, the court maintains wide discretion over the admissibility of the evidence or testimony facing a *Daubert* challenge and rests its conclusions on fingerprint examiner’s longstanding use.¹⁴⁴

Even though courts continue to uphold the use of fingerprint examination for “latent prints,” it cannot be denied that this type of examination has produced and can produce erroneous findings.¹⁴⁵ The small pool of cases showing error pales into comparison to the number of prints examined over the last decade among criminal cases here in the United States and abroad.¹⁴⁶ However, when one begins to realize and accept that fingerprint examinations are not infallible it may be possible and even prudent to see that the examination process could be internally and inherently flawed. Fingerprint examination is not a true and scientific process.¹⁴⁷ The fact that courts continue to allow such factual and overriding opinions into evidence provides a prejudicial effect on the individual defendant.

¹⁴² See *Baines*, 573 F.3d at 992; see also *Vargas*, 471 F.3d at 255.

¹⁴³ *Baines*, 573 F.3d at 992 (quoting *Llera Plaza*, 188 F. Supp. 2d at 572).

¹⁴⁴ See *Aman*, 748 F. Supp. 2d at 534 (citing *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 594 (1993); *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 142 (1999)).

¹⁴⁵ See Simon A. Cole, *More Than Zero: Accounting For Error In Latent Fingerprint Identification*, 95 J. CRIM. L. & CRIMINOLOGY 985, 1001-16 (2005) (explaining various cases [approximately twenty-two] from the early 1900s to early 2000s where misattribution occurred in some manner leading to improper identification).

¹⁴⁶ See *id.* at 1017.

¹⁴⁷ See *supra* Section V.C., pp. 18-19.

One Federal Court explained that “there is reason to seek out objective criteria in a field that relies heavily on examiners’ trained observations . . . allow[ing] for *some marginal* discretion on the part of the examiner.”¹⁴⁸ Many courts will bend to the helm of past precedent and rulings explaining using finger ridge skin to analyze, compare, and identify latent prints to others sources is admissible, reliable, and accurate—unless another third-party agency (testifying for the defendant) exploits the government’s findings and conclusions revealing the possible fallacy at hand.¹⁴⁹

However, courts have acknowledged that ACE-V has its shortcomings and is unreliable, yet refuse to find that an abuse of discretion when a trial judge determines that the testimony.¹⁵⁰ The reasoning for admission comes down to the centuries precedent allowing for it within the adversarial (criminal) system and its *technical* subjection to peer review.¹⁵¹ The testimony and opinions provided by fingerprint examiners connecting a defendant to a particular crime “goes towards the weight and credibility of the evidence[, which] . . . are issues best left to the trier of fact.”¹⁵²

SECTION VII. – WHAT TO DO?

Ultimately, when a defendant (or particularly defense counsel) handles a criminal matter that involves a latent fingerprint, fingerprint examiner, and the ACE-V method they should vehemently attack such evidence and testimony. Specifically speaking, look to the training, experience, and knowledge of the examiner, and whether they have the

¹⁴⁸ United States v. Council, 777 F. Supp. 2d 1006, 1012 (E.D. Va. 2011). *Emphasis added*.

¹⁴⁹ See *supra* notes 139-40.

¹⁵⁰ See United States v. Stone, 848 F. Supp. 2d 714, 718 (E.D. Mich. 2012) (citing United States v. Pena, 586 F.3d 105 (1st Cir. 2009); *Baines*, 573 F.3d at 979; *Daubert*, 509 U.S. 579).

¹⁵¹ See *id.* (continuing to also uphold the theory of low error rates among examinations); see also United States v. Havvard, 260 F.3d 697, 600 (7th Cir 2001); see also United States v. John, 697 F. 3d 263, 274-75 (5th Cir 2010)). *Emphasis added*.

¹⁵² *Stone*, 848 F. Supp. 2d at 719 (quoting United States v. Cooper, 91 F. Supp. 2d 79, 82-83 (DC Cir. 2000)).

ability to testify with such capacity.¹⁵³ The following questions should be considered when attacking the fingerprint examination process or its admissibility:

1. What is quality and size of the latent fingerprint?
2. Identify the degree of subjectivity used within the “examination.”
3. To what degree of similarity is needed in order to find identification between a two prints?
4. What are the agencies standards for qualification to become a forensic examiner?
5. The inability to properly test or validate the key foundation for its admittance, i.e. every individual has his or her own unique print.
6. The potential for bias and human and environmental error.

Moreover, a defense expert can be utilized to help rebut a government’s expert testimony. Due to examiners use of adversarial proceedings to validate its process, it is there where the truth of its errors, mistakes, misappropriations, and the ultimate issue of the examination’s accuracy will be found. As time passes, technology continues to advance people and courts will soon realize that fingerprint examination should not be used as it has during previous centuries.

¹⁵³ See *supra* Section IV., pp. 5-6; see also *supra* Section VI., pp. 20-24.