

CRIMINAL LAW BULLETIN

Volume 40, Number 3

The Defense Challenge to Fingerprints
Lisa J. Steele

© 2004 West, a Thomson business

West, a Thomson business, has created this publication to provide you with accurate and authoritative information concerning the subject matter covered. However, this publication was not necessarily prepared by persons licensed to practice law in a particular jurisdiction. West is not engaged in rendering legal or other professional advice, and this publication is not a substitute for the advice of an attorney. If you require legal or other expert advice, you should seek the services of a competent attorney or other professional.

The Defense Challenge to Fingerprints

Lisa J. Steele¹

“Criminal law requires an expert knowledge of bloodstains, policemen’s notebooks and the dark flow of human passion, as well as the argot currently in use round the Elephant and Castle.”

—Horace Rumpole, *Rumpole and the Age of Miracles* (1988)

Your client swears to you that he didn’t commit the crime and that he was miles from the crime scene. The prosecution’s case is weak, except that the client’s fingerprints were found near the body. What can you do?

Take a deep breath and look very hard at the fingerprint evidence. Fingerprint comparisons are not infallible. In 2004, a convicted murderer in Boston was exonerated by DNA; upon review his fingerprint had been misidentified by police examiners.² In 2002, the Las Vegas Police Department erroneously identified a female homicide victim.³ The woman identified as the victim turned up very much alive. The examiner in your case could have made a similar mistake. It is also possible, although very unlikely, that you have a fingerprint forgery case.

You will need to know how the fingerprint was obtained, what the examiner’s credentials and conclusions were, and a bit about the science of fingerprints themselves. You need to be aware of the recent fingerprint challenges, and be ready to explain to a trial judge why he or she should question the training and methods of a specific examiner, or of an agency, whose work has likely been accepted in many prior trials.

In the second part of this paper, we will talk a bit about the converse scenario. Your client’s prints were not found at the scene. When and how should you use this absence of evidence to argue that your client is not the true “bad guy?”

¹ Practicing Attorney, Bolton, Massachusetts and Co-Chair of the NACDL Forensic Evidence Committee. The views expressed are the author’s and not those of the NACDL.

The author would like to thank fingerprint examiners Pat Wertheim, Dusty Clark, and Jeff Saviano for their comments on drafts of this article. Edward Bedrosian, Jr., from the Middlesex County District Attorneys Office in Massachusetts co-taught two sessions of the CLE class for which this material was originally developed. The opinions and any errors in this article are the author’s.

² Saltzman & Daniel, Man freed in 1997 shooting of officer, *Boston Globe* (1/24/04 at A1, B6) (Convict freed after DNA exoneration reveals faulty fingerprint match by Boston police); Thomas, 2 Police Officers are put on Leave, *Boston Globe* (4/24/04 at B1, B7) (Police examiners who misidentified the defendant penalized).

³ See Coit, Santa Rosa woman identified as Vegas slaying victim turns up alive, *Press Democrat*, September 13, 2002, at A1, *The Las Vegas Review-Journal* noted the misidentification in a short “news in brief” on Sept. 18, 2002; Vigh, Evidence Bungled in Slaying, *Salt Lake Trib.*, Feb. 19, 2003, (examiner in criminal trial misidentified victim’s latent print as suspect’s); Berry, Pointing a Finger at Fingerprints, *L.A. Times*, Feb. 26, 2002, at A1.

The Defense Attorney's Case

The defense attorney has six ways to attack fingerprint evidence:

- (1) the recovered evidence—an examination of the procedure and chain of evidence to ensure that the recovered fingerprint is not a forgery. You can also make the usual challenges about whether the police properly seized or had access to the location from which the evidence was obtained.
- (2) the witness—a *Daubert/Plaza* challenge to the witness' training, experience, and certification. Get the expert's resume and check it for any credential inflation. Find out what the training and certifications require. Try to obtain training materials.
- (3) the science of fingerprint identification—a *Daubert/Plaza* challenge to the underlying science of fingerprint identification. Thus far unsuccessful, but still untried are challenges to the subjective nature of the evaluation, and on confirmation bias. Find out what organizations the expert belongs to and what treatises and journals he or she considers authoritative. Read them. Use the learned treatise rule if you want to impeach the expert with them.
- (4) methodology used in case on trial—related to the witness/science challenge. One must make a specific *Daubert/Plaza* challenge to the laboratory's methods and procedures. This may include a challenge that the expert was given overly suggestive information from the investigators.
- (5) the expert's opinion—a basic challenge about whether the prints match. If the challenge to the witness' credentials, science, and methodology has failed, then do not expect much success if you make this argument to the trial court. Normally, this will be an argument you make to the jury. It likely requires a defense expert to testify.
- (6) legitimate access—an argument that the defendant had legitimate access to the location and that the fingerprint was present for reasons unrelated to the crime. This may require the defendant to testify to succeed. This is most likely to work if the prosecution has a single print recovered from the sort of place a passerby might touch.

This paper primarily talks about the *Daubert/Plaza* challenge because it is the one that will require the most technical knowledge about fingerprints. A challenge to the recovered evidence is a standard motion to suppress challenging the police department's right to enter the location where the print was found and seize the evidence containing the print. This should be part of your pre-trial checklist.

The prosecution will have to introduce the exemplar and authenticate it. Check and find out whether the exemplar is vulnerable to challenge as the fruit of an unlawful arrest. Again, this should be part of your pre-trial checklist.

If you are satisfied that the exemplar (the rolled print taken from your

client⁴ was taken in a challenge-proof way, then you may want to stipulate that the exemplar is authentic and move to have any information about the associated arrest redacted. If you do not stipulate to this, then the prosecution may bring in one or more booking officers to identify your client and explain that he or she took your client's fingerprints in the past. That will inform the jury that your client has a prior criminal record.

You can stipulate to the authenticity of the rolled exemplar. Look carefully at the exhibit the prosecution intends to introduce and make sure that any information about arrests is redacted.⁵ You will still have the problem that jurors will be aware that police had your client's fingerprints on record, possibly before he was arrested. You might be able to ask that police re-print your client after his arrest and use that print as their exemplar. Note that the actual exemplar used should be provided to the jury, which may mean physically redacting a fingerprint card, although you could stipulate to a copy.⁶

The "innocent access" challenge essentially agrees that the latent print is your client's and that the identification is correct. The gist of the challenge is "so what?"⁷ Your client had access to the location as an occupant, employee, contractor, visitor, or another member of the public. As discussed

⁴ Look at the card and your client's fingers to confirm that the exemplar used is, in fact, your client's prints. If you have an expert, have him print the client and compare that exemplar to the prosecutor's latent. A mislabeled fingerprint card has been alleged to be a source of the error in the Cowans case. See Bernstein, *The Jig is Up*, Boston Phoenix (5/14/04 at 1).

⁵ A trial court in one case suggested that "if you redact everything but the fingerprints and the card came into evidence in front of the jury upon the stipulation that those were in fact the Defendant's fingerprints, why couldn't we avoid the whole problem?" *State v. Jason Day*, J.D. of Fairfield, Conn., CR 21072, June 14, 1991, at 925. The defense agreed to this procedure.

⁶ In the Day trial, the trial court suggested making a copy of the fingerprint card that would remove any incriminating evidence of arrest. "Certainly it is not necessary to be as crystal clear as the original because the jury is not going to be making its own examination. They are going to have to depend on what they hear," the Court remarked. *State v. Jason Day*, J.D. of Fairfield, Conn., CR 21072, June 14, 1991, at 927. The parties agreed to use a copy of the card as the exhibit.

If you are making a Plaza-style challenge to the methodology and opinion of the examiner, then you do want the jury to see the actual exemplar and to make their own comparison.

⁷ See, e.g., *Mikes v. Borg*, 947 F.2d 353 (9th Cir. 1991) (mere fact that defendant's fingerprints found on murder weapon not sufficient to show defendant was murderer); *U.S. v. Van Fossen*, 460 F.2d 38 (4th Cir. 1972) (defendant's prints on photographic negatives and engraving plate not sufficient to sustain conviction on possession of plates with intent to use them for counterfeiting); *U.S. v. Corso*, 439 F.2d 956 (4th Cir. 1971) (fingerprint on matchbook cover used to keep door from locking not sufficient to sustain conviction for burglary); *Borum v. United States*, 380 F.2d 595 (D.C. Cir. 1967) (four fingerprints found on empty jars that had contained stolen coin collection not sufficient to sustain conviction for housebreaking); *Com. v. Hall*, 32 Mass. App. Ct. 951, 952, 590 N.E.2d 1177 (1992) (presence of fingerprint at crime scene not sufficient by itself to support a guilty finding).

below, there are no scientific studies that allow a determination of when a fingerprint was placed on a given surface.⁸ If the client had legitimate access to the area, then the print could have been placed there days, weeks, even years before the crime. You may even try to make a relevancy challenge that, since the age of the print may not be accurately determined, the evidence is more prejudicial than probative.

The other three challenges—to the science, methodology, and conclusions, all require some technical understanding of fingerprints. Those challenges are the first part of this article.

What are Fingerprints?

Take a look at your fingertips. Look at the patterns and how they differ from finger to finger. Fingerprints are just one kind of friction ridge pattern. Your palms and your feet also have similar patterns. Some scientists have discussed matching lip prints,⁹ ear prints,¹⁰ fingernail impressions,¹¹ and so on, but these techniques are still in their infancy.

A brief digression on the history of fingerprints may give you some background for discussing the topic with judges, prosecutors, and experts. If you want more information, the second decision in *U.S. v. Llera Plaza*, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002) (Hereinafter sometimes referred to as *Plaza*.) spends a fair amount of its twenty-seven pages summarizing this history.

Sir William Herschel first proposed the theory that each fingerprint is unique and can be used for identification in 1858. Herschel, a British administrator, used fingerprints to identify Indian workers in Bengal and pensioners in an effort to prevent fraud. Henry Faulds, an English physician working in Japan, suggested using fingerprints to identify criminals in an article in *Nature* on November 25, 1880. Herschel and Faulds spent years arguing over who “first” discovered fingerprints as a method of identification.

Knowing that fingerprints are unique is important. However, police needed to be able to index fingerprint collections in order to match criminal

⁸ Cowger, *Friction Ridge Skin* 107-09 (1993); Lee & Gaensslen, *Advances in Fingerprint Technology* 405-06 (2d ed., 2001); Moenssens, *Fingerprint Techniques* 130-133 (1971); Wertherm, *Fingerprint Age Determination, Is There Any Hope?*, 53:1 *J. Forensic Identification* 42 (2003); Starrs, *The Aging of Fingerprints*, 22 *Sci. Sleuthing Rev.* 1 (1998).

⁹ *People v. Davis*, 304 Ill. App. 3d 427, 238 Ill. Dec. 149, 710 N.E.2d 1251 (2d Dist. 1999); Kasprzak, *Possibilities of Cheiloscopy*, 46 *Forensic Sci. Int'l* 145 (1990); Burns, *A “Kiss” for the Prosecution*, 31 *Identification News* 3 (July 1981).

¹⁰ *State v. Kunze*, 97 Wash. App. 832, 988 P.2d 977 (1999). See Champod, Evett & Kuchler, *Earmarks as Evidence: A Critical Review*, 46 *J. Forensic Sci.* 1275 (2001).

¹¹ See, e.g., Diaz, Boehm, & Rowe, *Comparison of Fingernail Ridge Patterns of Monozygotic Twins*, 35 *J. Forensic Sci.* 97 (1990).

records with fingerprints recovered at the crime scene. Faulds proposed one method to Scotland Yard in 1880. Faulds also wrote to Charles Darwin, who relayed the letter to Darwin's cousin, Francis Galton. Galton became interested in fingerprints as a method of identifying heredity, ethnicity, and race. Galton, writing in 1892, proposed a method of taking "rolled" fingerprints and a classification system based on three ridge shapes: arches, loops, and whorls. Because sixty percent of fingerprint patterns are loops, Galton divided those into "inner" loops, which open towards the thumb, and "outer" loops, which open towards the little finger. Edward Henry, an English colonial police officer, proposed a series of refinements to Galton's system. The modern fingerprint indexing system is based on Henry's system with some additional refinements.

If you want to attempt a *Plaza*-style challenge to the science of fingerprints, you may need to explain to a trial judge that:

(1) Fingerprinting was discovered and developed by English administrators, not scientists.

(2) Since its early days, fingerprint theory has been expanded by police departments and fingerprint examiners in police crime labs. Fingerprint theory has rarely been examined by scientists outside this field using blind and double-blind studies.

(3) Until the *Mitchell* and *Plaza* decisions, fingerprint theory was never skeptically examined by courts under either the *Frye* or *Daubert* standards.

(4) Fingerprints are primarily used for criminal investigations. They are sometimes used for security systems (biometrics) and for identifying victims of mass disasters, which suggest some independent validation, but be able to explain the differences between matching latent prints from crime scenes and matching fingerprints on actual fingers to exemplars.

(5) The *Plaza* decision held that fingerprinting is a technique. It is not a science.¹²

The Underlying Theory

The basic principle of fingerprint identification is that the patterns of friction ridges on fingertips, palms, toes, and the soles of the feet are unique and permanent to each individual. The prints are unique as to each finger and toe of each person. There is a biological basis¹³ for this claim, which is based on the development of the human fetus. Friction ridge patterns are effected by genetics,¹⁴ but even twins with identical genes have different fingerprints. In the roughly 100 years since fingerprints have been used for identification

¹² U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 552, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

¹³ For a detailed discussion of how fingerprints are created in the fetus, see Wertheim & Maceo, The Critical State of Friction Ridge and Pattern Formation, 52 J. Forensic Identification 37 (2002).

¹⁴ For more information on heredity and fingerprint patterns and on different percentages of patterns in different races, see Lin, Liu, Osterburg, et al., Fingerprint

purposes, no one has managed to falsify the claim of uniqueness by showing that fingers of two persons had identical fingerprints. Nor has anyone shown that the distinctive characteristics of one person's fingerprints changed over time (apart from readily explainable changes such as growth and scarring).

Challenges to this portion of the theory are likely to fail. Unless there is a drastic change in the state of fingerprint science, accept that fingerprints are unique to an individual and unchanging over one's life.¹⁵ However, if a closely-related family member is a viable suspect in your case and the recovered fingerprint is of poor quality, you can question the examiner about the tie between genetics and fingerprints, and ask the examiner whether the fingerprint could be more easily confused with a close relative than a random stranger and whether that possibility was taken into account in his or her examination.

Do not let the prosecutor portray your challenge as something it is not. If you are making a *Plaza* challenge, you are not attacking the theory of fingerprint uniqueness. You are only attacking the method of comparing a specific latent fingerprint to a specific exemplar from your client. A judge may be more willing to criticize an individual examiner's technique than to call 100 years of criminal procedure into question.

The challenges to fingerprints are based on comparisons. One rarely finds all ten fingerprint impressions at a crime scene. More often, police find the smeared partial impression of one or two fingers. A typical latent print is 1/5-of the size of a full fingerprint.¹⁶ Moving from the theory that there are no two identical complete fingerprints to the theory that there are no two identical partial fingerprints is a big logical step. The *Plaza* decision states that the statistical work on this comparison is incomplete, but accepts this as a working theory. The National Institutes of Justice (NIJ) announced, and then recalled, the grants they had created to shore up the scientific underpinnings of fingerprint research. This step is still theoretically vulnerable, but hard to practically challenge.

The Identification Process

An attack on fingerprint identification is based on the process of linking a latent fingerprint found at a crime scene with a sample fingerprint (called an exemplar) taken from the suspect.

For purposes of identification, an examiner generally uses a full "rolled" set of fingerprints taken under controlled circumstances. You have seen this in hundreds of movies and television shows. Those of you who have fire-arms permits, served in the military, or held certain federal jobs have likely been through it. Ink is put on the fingers. An officer then carefully rolls the

Comparison I: Similarity of Fingerprints, 27 J. Forensic Sci. 290 (1982); Berry, Race Relationships, Fingerprint World 48 (Jan. 1977).

¹⁵ This does not mean that it is appropriate for the trial court to take judicial notice of this fact. U.S. v. Mitchell, 365 F.3d 215, 252 (3d Cir. 2004).

¹⁶ U.S. v. Mitchell, 365 F.3d 215, 221 (3d Cir. 2004).

DEFENSE CHALLENGE TO FINGERPRINTS

finger on a card or piece of paper to obtain a clear, high quality impression of the entire surface from one edge of the fingernail to the other. Some police departments and federal agencies use a high-quality scanner to take an electronic “rolled” impression.

The officer takes an impression of a three-dimensional curved surface and puts it on a two-dimensional card. If you were to compare several different fingerprints of the same suspect taken at different times, there will be minor differences because of the amount of pressure used to roll the print and the amount and type of ink. This is an important concept for a jury whose mental image is of the examiner overlaying the exemplar and the latent print and getting a perfect match.

Pressure makes a big difference. Take a clean windowpane. Place your finger lightly on the window. Then make a series of impressions, one next to the other, of the same finger with increasing pressure. You will see the shape and pattern distort as the pad of the finger spreads out under pressure. You cannot just superimpose these images and get a perfect match. A fingerprint examiner needs to be able to account for this distortion in making comparisons.

The surface’s shape also makes a big difference. Repeat this same experiment with a clean, clear drinking glass. Now compare those prints to the ones on the flat window pane. You should see minor differences in the pattern. You cannot simply overlay one on the other and get a perfect match. (If you use this example when cross-examining the examiner, expect the jurors to try it for themselves in the jury room.)

When the evidence tech removes the latent print from an object with tape, he or she is going to transform a three-dimensional impression into a two-dimensional record. That is going to introduce other distortions. Think about the problems of representing the globe on a two-dimensional map and all the different projections used to deal with the inevitable distortions. The jury needs to understand that these distortions exist and can cause an examiner to make a mistake, especially if the latent print is of poor quality.

You need to make clear to the judge and jury that fingerprint matching is not as simple and certain as taking the latent print and overlaying it over the recovered print like a *C.S.I.: Crime Scene Investigations* special effect.¹⁷ Accounting for the distortions caused by pressure and surface requires the examiner to make judgment calls. The examiner’s experience and training, and any subconscious bias he or she may have, are the weak points in the prosecutor’s case.

Latent prints are left by substances such as sweat, oil, or blood on the friction ridges and deposited on a surface, such as glass, paper, or the metal surface of a gun. The evidence technician can use a variety of powders and materials to make the latent print visible, then lift it from the surface on a record card. You do not need to know the details of the various techniques

¹⁷ See Moenssens, *Fingerprint Techniques* 260 (1971). Moenssens, writing in 1971, could not use the CSI analogy, but he used something similar.

for most cases.¹⁸ Some of the books listed in this article describe the methods and their respective virtues and flaws in detail.¹⁹ If, however, the technique is new or of the expert's own devising, be wary. Make a *Daubert* challenge to make sure the technique has been properly tested and validated.

Check the documentation. Make sure you have a photograph of the latent print taken at the crime scene or when the print was discovered in the lab. If the photograph is digital, consider whether it has been altered, enhanced, or otherwise distorted.²⁰ Make sure that photograph fits in with the other crime scene photos. Look at the direction and location of the print, does it fit with how someone would handle the object during the crime.²¹ Check the evidence documentation with care. It is not technically difficult for someone to lift a fingerprint from something the suspect touches during an arrest or an interrogation and claim the print was found at the scene. Overzealous police officers and fingerprint experts have forged fingerprints.²² It can happen again. You need to be alert for the possibility and to make sure that the judge and the jury are aware of the potential problem.

Prosecutors may ask experts to testify about the age of the impression in order to show that the defendant was at the crime scene when the crime took place.²³ Counsel should object when experts use terms like "fresh" or "recent" or give time periods. There are no scientific studies that allows a

¹⁸ However, if the police recovered a fingerprint from biological material, like blood, then did DNA tests on the material, the techniques used to preserve the fingerprint may affect their results. See Grubwieser, Thaler, Köchl, Teissel, Rabl & Darson, Systemic Study on STR Profiling on Blood and Saliva Traces After Visualization of Fingerprint Marks, 48 J. Forensic. Sci. 733 (2003). See also Choi, DNA extractable from fingerprints, UPI Science News (7/30/03) (<http://www.upi.com/view.cfm?StoryID=20030730-040600-4102r>).

¹⁹ See also Lee & Gaensslen, Advances in Fingerprint Technology 108, 110 (2d ed., 2001) (discussing the damage powders and brushes cause to fingerprints).

²⁰ See Imwinkelreid & Cherry, The Myth of Fingerprints, The Champion 36 (Oct. 2003); Cherry, Reasons to Challenge Digital Evidence and Electronic Photography, The Champion 42 (July, 2003). See also Kennedy v. State, 853 So. 2d 571 (Fla. Dist. Ct. App. 4th Dist. 2003) (Frye hearing not required for digital photograph of latent print enhanced but not "altered" or "changed" by software).

²¹ See Com. v. Medina, 372 Mass. 772, 364 N.E.2d 203 (1977) (direction and position of print located on rifle did not comport with its being fired by victim, as alleged by defendant).

²² Geller, Almog, Margot & Springer, A Chronological Review of Fingerprint Forgery, 44 J. Forensic Sci. 963 (1999); Tarlow, Fingerprints Don't Lie—But Liars take Fingerprints, 19 The Champion 28 (Jan-Feb. 1995); Hansen, Troopers' Wrongdoing Taints Cases, 80 ABA J. 22 (Mar. 1994). See also Moenssens, Fingerprint Techniques 284-293 (1971); Wehde & Beffel, Fingerprints Can Be Forged (1924). See also Starrs, Fingerprints: Preventing Fabrication, 22 Sci. Sleuthing Rev. 13 (Fall 1998); Wertheim, Integrity Assurance: Police and Procedures to Prevent Fabrication of Latent Print Evidence, 48 J. Forensic Identification. 431 (1998).

²³ People v. Fitzgerald, 29 Cal. App. 3d 296, 105 Cal. Rptr. 458 (2d Dist. 1972); People v. Dotson, 263 Ill. App. 3d 571, 200 Ill. Dec. 220, 635 N.E.2d 559, 562 (1st

determination of when a fingerprint was placed on a given surface.²⁴ There are just too many variables: humidity, temperature, the amount the suspect tends to perspire; the amount the suspect perspires when under stress, even the surface itself. An examiner, given information about when and how the surface was last cleaned, could give an opinion about whether a fingerprint could have been made before the cleaning.²⁵ The examiner may be asked to opine whether other circumstances, such as finding a fingerprint inside a package that had been sealed until purchase, shows that the fingerprint was made after the date the package was sold.²⁶

Whenever a latent fingerprint and a rolled fingerprint are compared, there may be similarities and there will always be differences of detail, even if both are from the same region of friction skin.²⁷ When the differences are such that the expert considers they are within the acceptable range of differences to be expected between latent and rolled prints from the same region, then the examiner concludes that the latent and rolled prints are “indistinguishable” or that the outcome is a “match.”²⁸ Make sure the judge and jury understand that this is a judgment call. This is an opinion framed by the examiner’s training and experience. It can be influenced by subconscious bias.

Points

You may hear discussion of “points.”²⁹ Most examiners are now taught ACE-V (see below), but you may still find an examiner trained in the older method. If the prosecution prepares a trial exhibit, it may have enlarged

Dist. 1994); *Couser v. State*, 4 Md. App. 543, 243 A.2d 639 (1968); *State v. Thompson*, 610 S.W.2d 629 (Mo. 1981); *State v. Cline*, 275 Mont. 46, 909 P.2d 1171 (1996); *State v. Kitt*, 231 Neb. 52, 434 N.W.2d 543 (1989); *People v. Donaldson*, 107 A.D.2d 758, 484 N.Y.S.2d 123 (2d Dep’t 1985); *State v. Turner*, 90 N.M. 79, 559 P.2d 1206 (Ct. App. 1976); *State v. Alston*, 81 N.C. App. 459, 344 S.E.2d 339 (1986); *Edwards v. State*, 660 S.W.2d 622 (Tex. App. Corpus Christi 1983), petition for discretionary review refused (Mar. 28, 1984).

²⁴ Cowger, *Friction Ridge Skin* 107-09 (1993); Lee & Gaensslen, *Advances in Fingerprint Technology* 405-06 (2d ed., 2001); Moenssens, *Fingerprint Techniques* 130-133 (1971); Wertherm, *Fingerprint Age Determination, Is There Any Hope?*, 53 *J. Forensic Identification* 42 (2003); Starrs, *The Aging of Fingerprints*, 22 *Sci. Sleuthing Rev.* 1 (1998).

²⁵ Cowger, *Friction Ridge Skin* 108 (1993). Counsel could object if the prosecutor has not laid the basis for when and how the surface was last cleaned.

²⁶ Cowger, *Friction Ridge Skin* 108 (1993). Counsel could object. This is more a matter of common sense than the fingerprint examiner’s expertise. Look at case law dealing with excluding the testimony of experts on eyewitness memory for the limits of “common sense” testimony.

²⁷ Champod & Evett, *A Probabilistic Approach to Fingerprint Evidence*, 51 *J. For. Identification* 101, 102-03 (2001).

²⁸ Champod & Evett, *A Probabilistic Approach to Fingerprint Evidence*, 51 *J. For. Identification* 101, 103 (2001).

²⁹ *U.S. v. Mitchell*, 365 F.3d 215, 221 (3d Cir. 2004).

reproductions of the latent print and exemplar with a number of common points indicated.

A Galton points comparison of fingerprints for purposes of identification starts with comparing the general pattern (Level 1 detail in ACE-V) to see if there is broad agreement. Prints from different classes of patterns—an arch and a loop, for example—could not have been made by the same finger.

Next, the examiner looks for ridge characteristics (Level 2 detail in ACE-V) that of both that are of the same type and shape. Ridge endings, bifurcations, enclosures, and so forth must be the same.

Next, the examiner makes a qualitative comparison of points of similarity. The exact number of points varies in the United States, but 10 to 12 points is considered standard. Moenssens writes that 7 or 8 points are sufficient if some of them are very unusual types or combinations.³⁰

With the rise of ACE-V, questions about the number of points needed for an identification not likely to be useful in cross-examination, but you should be familiar with the terminology.

ACE-V

Point counting is on the wane in some departments. It is being replaced by ridgeology,³¹ which looks at the fingerprint pattern as a whole. The *Plaza* and *Mitchell* decisions discuss the method, called “ACE-V,” in detail.³²

The Ridgeology method comparison focuses on three different levels of details. *Level one* is the largest scale of information, such as the general type of the central area of the fingerprint, such as an arch, whorl, or loop. Other level one details may include the overall ridge count, focal areas of the print, such as “delta regions” (roughly triangular shaped areas where ridges flowing in different directions meet), and the orientation of the print. Showing that level one details are identical is not enough to make an identification of the finger that is the source of a latent print.

Level two detail focuses on the characteristics of ridge paths, such as places where ridges bifurcate or end or create dots or islands. These features provide a great deal of detail. Each feature can be identified in terms of the type of feature (end, bifurcation, etc.), its direction, and its location with respect to other identifiable features in the print. Level two detail can be used to identify one individual finger from among the entire human population as the source of the latent print.

Level three detail can be described as “ridge detail,” such as pores on a ridge and the width and shape of the ridge itself and its edges. Level three details are the most vulnerable to problems with the quality of the latent print. They are so small that a clear, high-quality image is needed to make

³⁰ Moenssens, *Fingerprint Techniques* 260 (1971).

³¹ See Ashbaugh, *Qualitative-Quantitative Friction Ridge Analysis* (1999), for a discussion of ridgeology by its creator.

³² *U.S. v. Mitchell*, 365 F.3d 215, 221-22 (3d Cir. 2004); *U.S. v. Llera Plaza*, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

accurate comparisons. When the latent print is sufficiently clear, level three detail can contribute to the identification of the source of a latent print.

A fingerprint examiner goes through a four-step process with the acronym “ACE-V,” for analysis, comparison, evaluation, and verification.

At the first, *analysis*, stage, the examiner studies the latent print closely and identifies the key features at levels one, two, and (if possible) three that can be used for identification purposes. The examiner then looks at a known exemplar print and analyzes it for key features. The examiner must study the latent print first to avoid contaminating his analysis with the features of the known exemplar print. Listen carefully to the direct examination. If the latent print examiner did not study the latent print first, move to strike the testimony for failure to follow the proper process.

At the second, *comparison*, stage, the examiner simply compares the latent print and the known exemplar feature by feature to see if they match up or if there are any unexplained discrepancies.

At the *evaluation* stage, the expert looks at the quality and quantity of the comparisons. The most important point at this stage, however, is that 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. Discrepancies can be caused, as discussed above, by the pressure used to make the prints, by the shape and texture of the surface, by the material the latent print was found on, and by the material used to preserve and develop the latent print. These discrepancies are expected and explainable.³³ A single non-explainable feature results in a non-identification.

Mistakes happen.³⁴ Defense counsel should be wary of accepting a fingerprint comparison at face value. The *Plaza* decision requires the fingerprint examiner to provide the trial court with the latent print, the rolled exemplar, and magnified images sufficient to show the comparison. Look hard at that comparison and make sure the examiner has accounted for any discrepancies.

The final step is *verification*. The general rule is that all positive identification opinions must be verified by a second qualified expert. The second expert may repeat the entire process, but the comparison may not be blind. That is, the second expert may know from the outset that another examiner has already made the positive identification.

³³ See Saltzman & Daniel, Man freed in 1997 shooting of officer, *Boston Globe*, Jan. 24, 2004, at A1, B6 (Convict freed after DNA exoneration reveals faulty fingerprint match by Boston police); John Thornton, The One Dissimilarity Doctrine in Fingerprint Identifications, 306 *Int'l Crim. Police Rev.* 89 (March 1977) (suggests that latent fingerprint examiners will routinely make up explanations regarding distortions so as to explain away differences in prints once the examiners have become convinced that the prints were made by the same finger).

³⁴ Bowden & Barrett, Fingerprint Errors Raise Questions on Local Convictions, *Fayetteville Times* (N.C.), Jan. 15, 1988, at 1A; Starrs, More Saltimbancos on the Loose?—Fingerprint Experts Caught in a Whorl of Error, *Sci. Sleuthing Newsl.*, Spring 1988, at 1. See *State v. Caldwell*, 322 N.W.2d 574 (Minn. 1982) (holding modified by, *Ferguson v. State*, 645 N.W.2d 437 (Minn. 2002)).

This was acceptable to the *Plaza* court. The author is not aware of any challenges made based on the inherent subjective bias created by comparisons where the verifying examiner knows what the “correct” answer will be. This may be a fertile area for challenges in the future. You might also consider comparing the examiner and verifier’s experience and credentials. A verifier who is less experienced than the examiner, or is supervised by the examiner, may be less willing to question an identification.

Error Rates

The United States government claims the error rate for the method is zero. See *U.S. v. Havvard*, 260 F.3d 597, 56 Fed. R. Evid. Serv. 900 (7th Cir. 2001). The claim is qualified by the reasonable concession that an individual examiner can of course make an error in a particular case.

A series of tests conducted by the CTI (Collaborative Testing Service), a private testing service, from 1995 to 2001 resulted in false positive (misidentifications) rates ranging from 3% to 22%.³⁵

The judge and the jury need to know that fingerprint comparisons are not infallible. They need to know that the examiner’s opinion is just that—an opinion. They need to understand that the examiner could be mistaken.

The *Mitchell* and *Plaza* Rulings

Problems started for fingerprint evidence with a series of articles by Simon Cole, a Ph.D. candidate in Science and Technology Studies at Cornell University whose doctoral thesis argued that fingerprint identification methods are not scientific. His conclusions were eventually published in *Suspect Identities: A History of Fingerprinting and Criminal Identification* (2001). Cole’s book and article spawned a series of *Daubert* challenges to fingerprinting. To date, there have been over forty *Daubert* challenges to fingerprints. None have been successful.

In 1998, Richard Jackson was sentenced in Delaware to life in prison for murder based largely on a fingerprint match to which three experts had testified. The defense argued, unsuccessfully, that it was a bad match. After Jackson spent more than two years in prison the prosecution conceded the error, and he was freed.³⁶

In Scotland a murder case (the McKie case) was overturned when detectives found a fingerprint at the scene of the crime that belonged to a police officer—who claimed she’d never been there in the first place. To verify her claim, she brought in two fingerprint analysts who attested that not only had

³⁵ Starrs, *Forensic Science on the Ropes: An Upper Cut to Fingerprinting*, 20 *Sci. Sleuthing Rev.* 1 (1996) (reporting a 22% rate of erroneous identifications in a 1995 survey in which the participants knew they were being tested); Collaborative Testing Services, *Forensic Testing Program: Latent Prints Examination*, Reports No. 9608, 9708, 9808.

³⁶ See, e.g., 60 Minutes (7/20/03) (summary atminutes/main563607.shtml).

her fingerprint been misidentified, but so had the print, found on a tin at the home of the accused, originally attributed to the victim.

The first “big” American case in this area was *U.S. v. Mitchell*, 199 F. Supp. 2d 262 (E.D. Pa. 2002), judgment aff’d, 365 F.3d 215 (3d Cir. 2004). Byron Mitchell was convicted in 1991 of driving the getaway car in a robbery carried out in Pennsylvania.³⁷ The case was based upon two sets of latent prints—one found on the steering wheel and another on the gear lever. Mitchell appealed in 1998. In 1999, the FBI sent the inked prints of Mitchell’s fingers and the latent prints found in the car to fifty-three state law enforcement agencies.³⁸ Eight of the thirty-five agencies that responded were unable to find a match for one of the latent prints, while six others could not find a match for the other.³⁹ This is a failure rate of twenty percent. The FBI resent the exemplar and latent prints to the laboratories with the points of similarity marked. It then got agreement from the labs. Judge Joyner of the Eastern District of Pennsylvania ruled that fingerprint evidence was admissible under Federal Rule of Evidence 702 and met the requirements of the *Daubert* and *Kumho Tire* decisions. The court also took judicial notice that human friction ridges are unique and permanent, including those visible in small friction ridge areas, and granted the government’s request to exclude the testimony of three defense experts who would have testified that fingerprint comparisons “are not scientific evidence” under *Daubert*.

Mitchell was affirmed on appeal in spring, 2004. The United States Court of Appeals for the Third Circuit explicitly held that it was not announcing a categorical rule that latent print evidence is admissible in its Circuit.⁴⁰ It held that the prosecution in *Mitchell* had proven to the Court’s satisfaction that (1) existing tests and experience with fingerprint records adequately supported the theory of uniqueness and permanence; (2) the verification step in ACE-V is an adequate form of peer review; (3) the rate of false positive results is very low and the false positives that have been reported reflect on the specific examiner’s competence, not on the area as a whole; and (4) general acceptance favors admissibility, although it found that non-law enforcement uses for fingerprint matching were distinguishable and not persuasive.⁴¹

The Court was concerned about the standards for comparison, noting that they were “insubstantial in comparison to the elaborate and exhaustively refined standards found in many scientific and technical disciplines.”⁴² In addition, the Court advised prosecutors to elicit testimony about the expert’s personal proficiency instead of relying on the field’s reputation among jurors.⁴³ It also expected defense counsel to expose unqualified examiners

³⁷ *U.S. v. Mitchell*, 365 F.3d 215, 220 (3d Cir. 2004).

³⁸ *U.S. v. Mitchell*, 365 F.3d 215, 223-24 (3d Cir. 2004).

³⁹ *U.S. v. Mitchell*, 365 F.3d 215, 224 (3d Cir. 2004).

⁴⁰ *U.S. v. Mitchell*, 365 F.3d 215, 246 (3d Cir. 2004).

⁴¹ *U.S. v. Mitchell*, 365 F.3d 215, 235-244 (3d Cir. 2004).

⁴² *U.S. v. Mitchell*, 365 F.3d 215, 241 (3d Cir. 2004).

⁴³ *U.S. v. Mitchell*, 365 F.3d 215, 242 (3d Cir. 2004).

using cross-examination.⁴⁴ In addition, it held that the trial court's decision to take judicial notice that "human friction ridges are unique and permanent throughout the area of the friction ridge skin, including small friction ridge areas, and that ... human friction skin arrangements are unique and permanent" was error because "small friction ridge areas" was vague, and there was dispute about how tiny an area could be and still be unique.⁴⁵ The error was, however, harmless given the proof the government could have offered on this point.

In *Mitchell* trial court decision was soon followed by *United States v. Plaza* (sometimes also referred to as *United States v. Llera Plaza*). Although the *Mitchell* appellate decision supercedes *Plaza* in some respects, the *Plaza* decision is worth studying for the detailed analysis offered by Judge Pollak, the suggestions it offers for how to make a challenge to a specific examiner, and the ultimate order given by Judge Pollak regarding what evidence the prosecution had to submit to ensure that the jury could adequately review the examiner's opinion. Judge Pollak ruled on January 7, 2002, that:

Accordingly, this court will permit the government to present testimony by fingerprint examiners who, suitably qualified as "expert" examiners by virtue of training and experience, may (1) describe how the rolled and latent fingerprints at issue in this case were obtained, (2) identify and place before the jury the fingerprints and such magnifications thereof as may be required to show minute details, and (3) point out any observed similarities (and differences) between any latent print and any rolled print the government contends are attributable to the same person. What such experts will not be permitted to do is to present "evaluation" testimony as to their "opinion" (Rule 702) that a particular latent print is in fact the print of a particular person. The defendants will be permitted to present their own fingerprint experts to counter the government's fingerprint testimony, but defense experts will also be precluded from presenting "evaluation" testimony. Government counsel, and defense counsel will, in closing argument be free to argue to the jury that, on the basis of the jury's observations of a particular latent print and a particular rolled print, the jury may find the existence, or non-existence of a match between the prints.⁴⁶

After rehearing at which the prosecution produced expert testimony about the experts' training, annual examinations, and about changes in the methods used in the United Kingdom, the court revised its order to permit the experts

⁴⁴ U.S. v. Mitchell, 365 F.3d 215, 242 (3d Cir. 2004).

⁴⁵ U.S. v. Mitchell, 365 F.3d 215, 251, 252 (3d Cir. 2004).

⁴⁶ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 552, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002) (quoting U.S. v. Llera Plaza, 179 F. Supp. 2d 492, 57 Fed. R. Evid. Serv. 983 (E.D. Pa. 2002), withdrawn from bound volume and opinion vacated and superseded on reconsideration, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002)) (the first decision was withdrawn from publication, U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002), withdrawn from bound volume and opinion vacated and superseded on reconsideration, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002), but the text is available on-line.)

to testify about their opinion with court oversight.⁴⁷ Specifically, the trial court said that such evidence would be subject to trial court oversight before presentation to the jury to ensure that the expert was adequately qualified and that the fingerprints offered into evidence were of a quality arguably susceptible to reasonable analysis, comparison, and evaluation. *Plaza* is not a blanket endorsement of the general admissibility of fingerprint evidence.

Specifically, the *Plaza* court looked at whether fingerprint identification experts were scientists or technicians, and concluded that their discipline was not a science.⁴⁸ Under *Kumho Tire*, the distinction between expertise based on science and technical expertise based on practical experience and observation has no effect on the witness' ability to testify.

The first *Daubert* criteria is the extent to which the proposed theory has been tested. The *Plaza* court concluded that the ACE-V fingerprint comparison method did not adequately satisfy the scientific criterion of testing (the first *Daubert* factor).⁴⁹ The *Plaza* court did not discuss the shortcomings of fingerprint research.⁵⁰

The second *Daubert* criteria are the extent to which the proposed theory has been subjected to peer review and publication. The *Plaza* court concluded that the fingerprint examiners' professional journals did not qualify as peer-reviewed journals as intended by *Daubert*.⁵¹

The third *Daubert* criteria is a consideration of the error rate of the theory or technique and the standards and controls used to minimize error. As one forensic scientist notes, scientists and courts simply do not have good statistics on error rates in most tests conducted in crime laboratories.⁵² In most cases, forensic scientists do not have any statistics.⁵³ Tests such as bullet comparison are empirically validated, but have little scientific foundation because they are subjective.⁵⁴ Careful observation is not good enough.⁵⁵

⁴⁷ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 576, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁴⁸ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002). The *Plaza* court also noted that fingerprint identification was used outside of the criminal justice community to identify deceased victims in mass disasters, for example, which suggests the technique may be reliable. U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 552, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁴⁹ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 560-562, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁵⁰ See Cole, *Suspect Identities: A History of Fingerprinting and Criminal Identification* (2001) (history and criticism of forensic fingerprinting).

⁵¹ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 563, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁵² Thornton, *Courts of Law v. Courts of Science: A Forensic Scientist's Reaction to Daubert*, 1 *Shepard's Expert & Sci. Evidence Q.* 475, 481 (1994).

⁵³ Thornton, *Courts of Law v. Courts of Science: A Forensic Scientist's Reaction to Daubert*, 1 *Shepard's Expert & Sci. Evidence Q.* 475, 481 (1994).

⁵⁴ Thornton, *Courts of Law v. Courts of Science: A Forensic Scientist's Reaction to Daubert*, 1 *Shepard's Expert & Sci. Evidence Q.* 475, 482 (1994).

Controlled, double-blind tests are needed to validate methods.⁵⁶ These tests simply have not been done in the fingerprint area.

The fourth and final *Daubert* criteria is a consideration of whether the theory is “generally accepted.” Widespread acceptance can be an important factor in ruling particular evidence admissible. Latent fingerprint comparisons, were accepted by the courts before the standards imposed by *Frye*, and later *Daubert*⁵⁷ and *Kumho Tire*.⁵⁸ The *Plaza* court discounted general acceptance within the fingerprint examiner community, but placed significant weight on the adoption of similar methods by the English criminal justice system.⁵⁹

The *Plaza* court had its greatest difficulty with fingerprint comparisons at the stage of comparison where the examiner makes a subjective judgment about the quality of the match.⁶⁰ The *Plaza* court initially held that fingerprint examiners could not testify about their opinion that a latent and rolled print matched.⁶¹ On rehearing, after the prosecution presented extensive evidence about the FBI’s minimum education and training requirements for its examiners and about its annual proficiency testing, the *Plaza* court concluded, despite reservations about the adequacy of the FBI’s testing program,

⁵⁵ Thornton, Courts of Law v. Courts of Science: A Forensic Scientist’s Reaction to Daubert, 1 Shepard’s Expert & Sci. Evidence Q. 475, 485 (1994).

⁵⁶ Jonakait, Real Science and Forensic Science, 1 Shepard’s Expert and Sci. Evidence Q. 435, 440 (1994).

⁵⁷ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469, 27 U.S.P.Q.2d (BNA) 1200, Prod. Liab. Rep. (CCH) ¶ 13494, 37 Fed. R. Evid. Serv. 1, 23 Env’tl. L. Rep. 20979 (1993).

⁵⁸ *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 119 S. Ct. 1167, 143 L. Ed. 2d 238, 50 U.S.P.Q.2d (BNA) 1177, Prod. Liab. Rep. (CCH) ¶ 15470, 50 Fed. R. Evid. Serv. 1373, 29 Env’tl. L. Rep. 20638 (1999).

⁵⁹ *U.S. v. Llera Plaza*, 188 F. Supp. 2d 549, 566-71, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁶⁰ The court wrote that:

The *Daubert* difficulty with the ACE-V process is by no means total. The difficulty comes into play at the stage at which, as experienced specialists * * * themselves acknowledge, the ACE-V process becomes “subjective”—namely, the evaluation stage. By contrast, the antecedent analysis and comparison stages are, according to testimony, “objective” analysis of the rolled and latent prints and comparison of what the examiner has observed in the two prints. Up to the evaluation stage, the ACE-V fingerprint examiner’s testimony is descriptive, not judgmental.

U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 552, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002) (quoting *U.S. v. Llera Plaza*, 179 F. Supp. 2d 492, 57 Fed. R. Evid. Serv. 983 (E.D. Pa. 2002), withdrawn from bound volume and opinion vacated and superseded on reconsideration, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002)).

⁶¹ *U.S. v. Llera Plaza*, 188 F. Supp. 2d 549, 552, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002) (quoting *U.S. v. Llera Plaza*, 179 F. Supp. 2d 492, 57 Fed. R. Evid. Serv. 983 (E.D. Pa. 2002), withdrawn from bound volume and opinion vacated and superseded on reconsideration, 188 F. Supp. 2d 549, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002)).

that FBI examiners were sufficiently well trained to testify about their opinion under *Daubert*.⁶²

The *Plaza* court allowed FBI fingerprint experts to testify about their opinion that a latent fingerprint matched a rolled fingerprint only after (1) reviewing the FBI's minimum standards for its examiners,⁶³ (2) reviewed the FBI's annual certification testing,⁶⁴ and (3) requiring the FBI expert to show the jury the actual recovered fingerprint, rolled fingerprint, and such magnified images as necessary to allow the jury to see and understand the basis for the testimony.⁶⁵

You need to make it clear to judges that *Plaza* is not a blanket affirmation of fingerprint comparisons. Trial judges should take an active role in overseeing fingerprint (and other forensic) evidence. Insist on getting information on training and certification standards and explain to the trial court where local standards do, or do not, meet the FBI's standards accepted in *Plaza*.

Insist that the trial courts review the procedures used by the laboratory and the individual examiner⁶⁶ to ensure that these also match accepted standards in the field and produce an acceptable accuracy rate.⁶⁷ Find out whether the examiner's training and certifications meet or exceed the FBI's minimum

⁶² U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 565-66, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁶³ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 555-56 n.2, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002). The FBI's minimum standard is a bachelor's degree, preferably as a science major, a two-year in-house training program, and a three-day certifying examination.

⁶⁴ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 555-57, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002). The FBI conducted annual examinations for every examiner allowed to testify in court from 1995 to 2001. The test involved comparing a set of latent fingerprints to a number of exemplar prints in a blind fashion. The test takers knew they were being examined and presumably took great care with the results. The FBI expert testified that during those years, there had been only one incorrect result—a false negative (a print reported as non-matching that did in fact come from the same source). A defense expert and the trial court criticized the testing regime as not being rigorous enough in comparison with the difficulty of matching latent prints found at actual crime scenes.

⁶⁵ U.S. v. Llera Plaza, 188 F. Supp. 2d 549, 552, 58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002).

⁶⁶ See, e.g., Brundage, Proficiency Testing in Illinois, 12:3 AFTE J. 76 (1980) (discussing methods and system for testing firearms examiners).

⁶⁷ Some courts place the burden on the defendant to demonstrate that there is some significant discrepancy between the challenged examiner's training and agency's competency testing before holding a *Plaza* hearing. See U.S. v. Frias, 2033 U.S. Dist. LEXIS, at *2079 (S.D.N.Y. Feb. 11, 2003). U.S. v. Cruz-Rivera, 2003 U.S. Dist. LEXIS, at *5736 (D.P.R. March 27, 2002).

It may be prudent to inquire about the examiner's training and competency testing in discovery and then include any discrepancies in a *Plaza*-style motion. You should also discuss the prejudicial effects of admitting fingerprint testimony by an examiner whose qualifications are less than the FBI's standards and why cross-

standards. If they do not, move to exclude the examiner under *Plaza* as insufficiently qualified. In addition, move to strengthen the *Plaza* standards. Judge Pollak was critical of the FBI's testing regime. Defense counsel can argue for stronger standards for local examiners in this critical area.

For the most part, things were quiet in fingerprint litigation after the *Plaza* ruling. In 2003, the United States Court of Appeals for the Fourth Circuit upheld the admissibility of expert testimony about fingerprint and palm print comparisons.⁶⁸ The fingerprint journals have discussed the *Plaza* decision at length; many fingerprint experts are critical of Judge Pollak's reasoning and conclusions.⁶⁹ SWGFAST (Scientific Working Group on Friction Ridge Analysis, Study and Technology) has published a number of guidelines to ensure accurate identifications.⁷⁰

In early 2004, Stephen Cowans, a convicted murderer was exonerated by DNA evidence.⁷¹ At trial, Boston Police Department examiners had testified that Cowans' fingerprint had been found on a glass associated with the crime scene.⁷² The prosecutor had the print re-examined by the Massachusetts State Police laboratory, which concluded the print was not Cowans'.⁷³ The two Boston Police Department examiners have been placed on leave pending an investigation.⁷⁴ Local newspapers report that the Boston Police Department often placed officers with disciplinary problems in the department's identification unit,⁷⁵ which does not give one confidence in the officers' thoroughness or ethics in this vital area. The state Attorney

examination regarding the weight of the evidence will not protect your client's rights to a fair trial.

⁶⁸ U.S. v. Crisp, 324 F.3d 261, 60 Fed. R. Evid. Serv. 1486 (4th Cir. 2003), cert. denied, 124 S. Ct. 220, 157 L. Ed. 2d 159 (U.S. 2003). Judge Michael's dissent suggests some strategies for fingerprint challenges in other courts. See also U.S. v. Harvard, 260 F.3d 597, 56 Fed. R. Evid. Serv. 900 (7th Cir. 2001); U.S. v. Hernandez, 299 F.3d 984, 991 (8th Cir. 2002), cert. denied, 537 U.S. 1134, 123 S. Ct. 918, 154 L. Ed. 2d 825 (2003).

⁶⁹ See, e.g., Moenssens, Fingerprint Identification: A Reliable "Forensic Science"? , A.B.A. Crim. J. 30 (Summer 2003).

⁷⁰ See <http://www.swgfast.org/>

⁷¹ Saltzman & Daniel, Man freed in 1997 shooting of officer, Boston Globe (1/24/04 at A1, B6) (Convict freed after DNA exoneration reveals faulty fingerprint match by Boston police).

⁷² Saltzman & Daniel, Man freed in 1997 shooting of officer, Boston Globe (1/24/04 at A1, B6) (Convict freed after DNA exoneration reveals faulty fingerprint match by Boston police).

⁷³ Saltzman & Daniel, Man freed in 1997 shooting of officer, Boston Globe (1/24/04 at A1, B6) (Convict freed after DNA exoneration reveals faulty fingerprint match by Boston police).

⁷⁴ Thomas, 2 Police Officers are put on Leave, Boston Globe (4/24/04 at B1, B7) (Police examiners who misidentified the defendant penalized).

⁷⁵ Mulvihill & Richardson, Unfit Cops put in Key Evidence Unit, Boston Herald (5/6/04 at 2-3) (officers with disciplinary problems assigned to Boston Police Department ID unit).

General's investigation is ongoing — the Cowans case is likely to spawn more challenges about fingerprint examiners and latent-print matching methods.

Subjective Bias

In *Plaza*, the trial court's concerns about subjectivity were answered by a detailed response to challenges about training, proficiency, and procedure within the FBI laboratory. The trial court was not asked to consider the fundamental problem in any subjective comparison with the psychological phenomena known as "confirmation bias." 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 procure unwittingly support for their beliefs through their own behavior.⁷⁶ The danger of confirmation bias affecting an examiner's subjective opinion is rarely discussed in the fingerprint examination literature or in the court cases upholding admissibility of the technique.

Confirmation bias has caused famous scientists to fail to report easily-visible phenomena that do not fit their expectations⁷⁷ and to observe non-existent phenomena.⁷⁸ Expectations have caused laboratory workers to conform unconsciously test results to an expected norm.⁷⁹ Logically, that same confirmation bias can cause examiners to overestimate the quality or quantity of ridge patterns when they have external reasons to expect a match

⁷⁶ Nickerson, Confirmation Bias: A Ubiquitous Phenomenon in Many Guises, 2 Rev. Gen. Psych. 175-220 (1998); Snyder, Motivational Foundations of Behavioral Confirmation, 25 Advances in Experimental Soc. Psych. 67-114 (1992); Zuckerman, Knee, Hodgins & Miyake, Hypothesis Confirmation: The Joint Effect of Positive Test Strategy and Acquiescence Response Set, 68 J. Personality & Soc. Psych. 52-60 (1995).

⁷⁷ Edwin G. Boring, Newton and the Spectral Lines, 136 Science 600, 600-01 (1962) (Sir Isaac Newton's failure to note absorption lines visible in his apparatus that did not conform to his theory). See generally Resinger, et al., The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion, 90 Calif. L. Rev. 1 (2002).

⁷⁸ See, e.g., Resinger, et al., The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion, 90 Calif. L. Rev. 1 (2002).

⁷⁹ Berkson, The Error of Estimate of the Blood Cell Count as Made with the Hemocytometer, 128 Am. J. Physiology 309, 322 (1940); Johnson, Seeing's Believing, 15 New Biology 60, 79 (1953); Cordaro & Ison, The Psychology of the Scientist: X. Observer Bias in Classical Conditioning of the Planarian, 13 Psychol. Rep. 787 (1963). See generally Resinger, et al., The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion, 90 Calif. L. Rev. 1 (2002).

and to underestimate the quality and quantity of patterns when they have external reasons to expect a non-match. So long as the criteria is subjective, confirmation bias may be impossible to avoid. The fingerprint cases have not yet challenged fingerprint comparisons using confirmation bias. It is unclear how prosecutors will respond to these arguments and how receptive the courts will be to this concern.

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.⁸⁰ The examiner may be given crime scene evidence, autopsy evidence, and a fingerprint exemplar clearly labeled as the suspect's.⁸¹ This may be accompanied by a written or oral synopsis of the reasons the investigator believes the suspect is guilty.⁸² In high-profile cases, there may be immense public pressure to validate eyewitnesses' statements or an admission with "neutral" scientific evidence. This suggestiveness, coupled with the understandable prosecution sympathies of many examiners, may skew, unconsciously, subjective judgments.⁸³ Confirmation biases may lead the examiner to attribute subconsciously more significance to patterns that support the police theory-of-the-case and attribute things that conflict with the police theory to some sort of distortion. It is easy for an examiner to interpret the observations to fit his or her expectations.

One illustration of this problem occurred in a 1987 experiment involving hair samples. Students who were given hair samples from a crime scene and a suspect in a suggestive manner had a 30.8% error rate; students who were given hair samples from a crime scene and from five possible suspects had a 3.8% error rate.⁸⁴ Similar errors should be expected from fingerprint examiners given suggestive information.

Suggestive information given to the examiner after he or she has formed an opinion may affect how confident the examiner is of his or her results. Psychological research on eyewitnesses shows that an eyewitness' identification of a suspect and his or her confidence in that identification can be significantly affected by suggestions, or even body language, of an investiga-

⁸⁰ See Jonakait, *Forensic Science: The Need for Regulation*, 4 *Harv. J. L. & Tech.* 109, 160 (1991).

⁸¹ See Jonakait, *Forensic Science: The Need for Regulation*, 4 *Harv. J. L. & Tech.* 109, 160 (1991).

⁸² Jonakait, *Forensic Science: The Need for Regulation*, 4 *Harv. J. L. & Tech.* 109, 160 (1991).

⁸³ Miller, *Procedural Bias in Forensic Science Examinations of Human Hair*, 11 *L. & Hum. Behav.* 157, 158 (1987); Kates & Guttenplan, *Ethical Considerations in Forensic Science Services*, 28 *J. Forensic Sci.* 972, 972, 975 (1983).

⁸⁴ Miller, *Procedural Bias in Forensic Science Examinations of Human Hair*, 11 *L. & Hum. Behav.* 157, 160-61 (1987) (The crime scene sample did not match any of the other submitted samples; the correct answer was "no match.").

tor who is aware which person in the photo array or line-up is the suspect.⁸⁵ Examiners are not immune to this sort of influence on their subjective opinions. Counsel should be skeptical about an examiner who has discussed the case with an investigator before he or she has made a comparison and written his or her report.

Psychological research on eyewitnesses also shows that an eyewitness' confidence grows as their trial approaches.⁸⁶ Eyewitnesses readily revise their confidence estimates upwards, and are less likely to revise them downwards.⁸⁷ There is no reason to think that experts testifying about their certainty regarding fingerprint identifications would be any less affected by this phenomena. Examiners and counsel should be aware of this problem, especially where the examiner's report is not accompanied by the suggested narratives showing what information was available at the time of the testing and report and the examiner's confidence at the time of the report.

It can be difficult to get psychological testimony before a judge or jury. Courts are often skeptical about it. You may have to do a fair amount of work to make the judge understand why subjective bias is important. After all, the same confirmation bias is at work in the judge's mind, predisposing him or her to attribute more significance to information that supports the admissibility and validity of fingerprint comparisons.

Sample Voir-Dire Questions

When you are preparing a challenge to a fingerprint examiner, you will need to know about his theories and methods.⁸⁸ These questions are adapted

⁸⁵ Wells & Seelau, *Eyewitness Identification: Psychological and Legal Policy on Lineups*, 1 *Psych. Pub. Pol'y & Law* 765 (1995); Nettles, Nettles, and Wells, *Eyewitness Identification: "I Noticed You Paused At Number Three,"* *The Champion* 11 (Nov. 1996). See generally Cutler & Penrod, *Mistaken Identification: The Eyewitness, Psychology and the Law* (1995).

⁸⁶ Cohen, *I Could Swear It was Him, Officer*, *New Scientist*, Jan. 17, 1997, at 11.

⁸⁷ Cohen, *I Could Swear It was Him, Officer*, *New Scientist*, Jan. 17, 1997, at 11.

⁸⁸ In pre-trial discovery, you should have asked for and received a copy of the expert's resume and/or c.v. and any articles or materials he or she has published. You should have verified his or her credentials (people do exaggerate sometimes) and read any articles the expert has written.

You should also have asked for and received a copy of any written procedures or policies from the department involved, bench notes, equipment maintenance logs, pictures of the latent print and the exemplars, and any materials relied upon by the expert in making his determination. You should also find out whether the unit is viewed as a prestigious assignment or as a "dumping ground" for troubled personnel. See Mulvihill & Richardson, *Unfit Cops put in Key Evidence Unit*, *Boston Herald* (5/6/04 at 2-3) (officers with disciplinary problems assigned to Boston Police Department ID unit).

from an examiners' professional journal discussing vulnerability to cross-examination.⁸⁹

- Do you conduct technical procedures under clearly defined policies and procedures? (Ask for a copy of these procedures in pre-trial discovery.)
- Did you follow those policies and procedures in your examination?
- Do you know what a peer-reviewed journal is and why it is important?
- Do you regularly read any peer-reviewed journals? Which ones?
- Are you a member of any professional organizations? Which ones?
- What qualifications are required for examiners hired by or assigned to your unit?
- (If your examiner does not have a bachelor's degree with science training) Do you think that newly hired examiners should have college training in science?⁹⁰ Why or why not?
- Can you explain "error rates" and their relevance to your testimony?
- Can you explain "confirmation bias?"
- Do you know how to construct a scientifically defensible validation study?
- In under a minute, can you explain the reasons for and value of validation studies?
- Can you name the last two validation studies your department has conducted regarding latent prints?
- Do you keep an equipment maintenance log?
- Do you participate in regular, structured proficiency testing? How did you do?
- What is the minimum passing score in your department?
- When you take the test, do you know it is a test?
- Are the problems used in your test harder or easier than the comparisons you made in this case?
- Are you certified as a Latent Print examiner? By whom?
- Do you know what SWGFAST is?
- Do you know how often it meets?
- Is your organization implementing SWGFAST guidelines?
- What do you think of the SWGFAST guidelines? Are they too restrictive, not restrictive enough, or about right?
- Is your department using the ACE-V method? If not, what methodology are you using and why is it superior?
- Could you define ACE-V for the jury?
- Can you explain ACE-V's premises and processes in about three minutes?
- How many levels of ridge detail are posited in ACE-V?
- What level of detail is most commonly used to effect fingerprint identifications?

The "No Print" Defense

"You know, from a defense attorney's point of view, that's the best pos-

⁸⁹ Nielson, Are you dead? Take this test and find out, 53:1 J. Forensic Identification 1 (2003).

⁹⁰ This question can be especially useful if the agency has begun requiring science degrees for new hires.

DEFENSE CHALLENGE TO FINGERPRINTS

sible result that we could hope for from a dusting for fingerprints; that being that there was no evidence there which linked our client to the crime scene.”

Defense counsel testifying in *Day v. Commissioner*, CV01-003455 (Rockville, Conn.)

Up to this point, we’ve been discussing cases where your client’s print is found at the crime scene. What about the opposite situation? What if the crime scene evidence technicians didn’t find your client’s print or didn’t look for fingerprints at all?⁹¹ As one examiner said to the author “Absence of evidence is not evidence of absence.” The prosecutor does not need to find your client’s prints to convict him.⁹²

You can cross-examine investigators and latent print experts about what tests they made and did not make, and you can argue in closing argument that the prosecution’s failure to conduct fingerprint examinations can raise a reasonable doubt in the minds of the jurors.⁹³ You can also ask the trial court to instruct the jury that it may draw an adverse inference from the prosecution’s “missing evidence.”⁹⁴

⁹¹ See generally Giannelli & Imwinkelried, *Scientific Evidence* § 16-11 (3d 1999).

⁹² The prosecutor may try the converse of this argument, arguing that if prints were not found, it indicates a consciousness of guilt on the part of your client, who must have wiped down the area or worn gloves. See Neilson, *Rebutting the No Fingerprint Defense, The Detail* (Dec. 12, 2002), available at [http://www.cplex.com/Articles/The Detail//1-99/TheDetail70.htm](http://www.cplex.com/Articles/The%20Detail//1-99/TheDetail70.htm). There are any number of reasons why a suspect’s prints may not be at the scene. Object if the prosecutor tries to elicit testimony in his direct examination or makes the inference in closing argument that the sole reason prints were not found is that your client destroyed or prevented them.

⁹³ See *Com. v. Bowden*, 379 Mass. 472, 485-86, 399 N.E.2d 482 (1980); *Com. v. Willie*, 400 Mass. 427, 428-30, 510 N.E.2d 258 (1987) (fingerprints and blood).

There is some dispute nationally about whether you may argue that the jury can draw an adverse inference from the prosecution’s failure to look for fingerprints if you have not established by cross-examination that it was possible to obtain such evidence under the circumstances. See *U.S. v. Poindexter*, 942 F.2d 354, 359, 33 Fed. R. Evid. Serv. 1073 (6th Cir. 1991), on reh’g, 956 F.2d 124 (6th Cir. 1992) (must show evidence could have been obtained); *Jordan v. State*, 267 Ala. 361, 102 So. 2d 4 (1958). See *Eley v. State*, 288 Md. 548, 419 A.2d 384 (1980) (state has burden to bring forward evidence; defense must do nothing).

⁹⁴ See Hrones & Hamans, *Mass Jury Instructions—Criminal* at No. 2-19, 2-59, 2-60 (2d ed. 2002); *MCLE 2 Mass. Superior Court Criminal Practice Jury Instructions* § 5.6 p. 5-33 (1999).

Giving such an instruction is within the trial court’s discretion, denial of such an instruction has thusfar been upheld on appeal. See *Com. v. Williams*, 439 Mass. 678, 687, 790 N.E.2d 662 (2003); *Com. v. Leitzsey*, 421 Mass. 694, 702, 659 N.E.2d 1168 (1996); *Com. v. Brown*, 411 Mass. 115, 119, 579 N.E.2d 153 (1991); *Com. v. Willie*, 400 Mass. 427, 428-30, 510 N.E.2d 258 (1987); *Com. v. Phong Thu Ly*, 19 Mass. App. Ct. 901, 902, 471 N.E.2d 383 (1984).

Your focus is showing “why a test was omitted.”⁹⁵ This leads to suggestions that the police investigators were biased, that their investigation was “sloppy”; and that their testimony is not credible.⁹⁶

The prosecutor may try to elicit testimony or direct or rebuttal direct examination testimony that fingerprint testing could not be performed or that the result had it been performed would have been of little probative value.⁹⁷ The prosecution may not elicit testimony about the witness’ personal opinion about the strength of the police investigators’ case against the defendant.⁹⁸ Be aware that the prosecutor may be able to cite treatises on appeal regarding the relative scarcity of fingerprints even if that evidence was not elicited on the record at trial.⁹⁹

If an evidence technician or latent print examiner testifies that a specific test could not be performed due to the surface involved or other technical issues and you believe otherwise, you may need your own fingerprint expert or a learned treatise to respond.¹⁰⁰

It is not clear whether police can only testify about the general factors that are required to create a fingerprint, or whether they can provide a specific percentage of cases in which latent fingerprint evidence is found.¹⁰¹

⁹⁵ *Com. v. Flanagan*, 20 Mass. App. Ct. 472, 475-76, 481 N.E.2d 205 (1985).

⁹⁶ *Id.* See also *U.S. v. Rose*, 104 F.3d 1408, 1417, 46 Fed. R. Evid. Serv. 397 (1st Cir. 1997) (trial court had discretion to deny “missing evidence” jury instruction, defense could have argued failure to test evidence in closing); *U.S. v. Poindexter*, 942 F.2d 354, 358-60, 33 Fed. R. Evid. Serv. 1073 (6th Cir. 1991), on reh’g, 956 F.2d 124 (6th Cir. 1992) (closing argument erroneously precluded where fingerprint powder was on evidence, but no latent print was found); *U.S. v. Thompson*, 37 F.3d 450 (9th Cir. 1994) (defense is entitled to argue to the jury that the government’s failure to present fingerprint evidence weakens its case); *U.S. v. Hoffman*, 964 F.2d 21 (D.C. Cir. 1992) (defense may argue to the jury that no fingerprint evidence has been introduced and to argue that the absence of such evidence weakens the government’s case).

⁹⁷ *Com. v. Flanagan*, 20 Mass. App. Ct. 472, 476 n.2, 481 N.E.2d 205 (1985).

⁹⁸ *Com. v. Flanagan*, 20 Mass. App. Ct. 472, 476 n.2, 481 N.E.2d 205 (1985).

⁹⁹ See *Scott v. Henrich*, 978 F.2d 481, 485 (9th Cir. 1992), opinion withdrawn, 994 F.2d 1343 (9th Cir. 1993) and opinion superseded, 39 F.3d 912 (9th Cir. 1994) (citing as authority *Olson, Scott’s Fingerprint Mechanics* (1978)); *Cherill, The Fingerprint System at Scotland Yard* (1954). It is unclear whether the parties cited to these sources or whether the Court discovered them in its own research.

¹⁰⁰ A good resource on techniques can be found at the Chesapeake Bay IAI page, available at <http://www.cbdi.ai.org/Reagents/main.html>.

¹⁰¹ *U.S. v. Christophe*, 833 F.2d 1296, 1300, 24 Fed. R. Evid. Serv. 1 (9th Cir. 1987) (fingerprints found in only 10% of bank robberies); *U.S. v. Burdeau*, 168 F.3d 352, 357, 50 Fed. R. Evid. Serv. 1448 (9th Cir. 1999) (FBI agent testified that identifiable fingerprints are almost never found on guns and only rarely on other objects submitted for testing); *U.S. v. Feldman*, 788 F.2d 544, 554, 20 Fed. R. Evid. Serv. 545 (9th Cir. 1986) (fingerprints found in less than 5% of bank robberies). But see *State v. Robinson*, 330 N.C. 1, 409 S.E.2d 288, 301 (1991) (not relevant to case).

A due process claim that the failure of police to test for fingerprints denied your client potentially exculpatory evidence is likely to fail.¹⁰²

When to use the “No Print” Defense

The “no print” defense works well in cases where the prosecutor’s evidence depends on eyewitnesses, informants, and confessions. It also works well in possession cases where your client claims he or she did not know the item they were transporting contained contraband. In a eyewitness error, “lying snitch,” or false confession case, the “no print” defense is designed to echo the theme of police errors which lead to the witness’ memory being contaminated by suggestion, or by improper dealing with the snitch, or by coercive interrogation techniques. In an unwitting mule defense, the absence of fingerprints on the interior of the item or on the contraband is, you suggest, evidence that the client did not know what he or she carried.

Start with the prosecutor or police investigator’s theory how the crime was committed. You may be able to find this in police reports, warrant affidavits, or witness statements. Look at the crime scene sketch prepared by police. If there is not one, your investigator may be able to make one. Look at the photographs. Look at the reports to see what surfaces were checked for fingerprints, what objects were seized, and which of the seized objects were examined for latent prints and how.

that witness has found identifiable prints only 3% of the cases he personally investigated).

One author claims that fingerprints leading to a suspect are found in only 3% of crime scenes. Neilson, *Rebutting the No Fingerprint Defense*, *The Detail*, Dec. 9, 2002, available at <http://www.clpex.com/Articles/TheDetail/1-99/TheDetail70.htm>; Nielson, *A Rebuttal to the “No Fingerprint” Defense*, 33 *Identification News* 12 (Aug. 1983) (citing studies showing suspect’s prints recovered at 4.5% of crime scenes, and that identifiable prints were found at 7 to 10% of cases); see also “The Importance of the Lack of Fingerprints: A Challenge to the Prosecution,” available at <http://www.scafo.org/library/110302.html>. In contrast, another author states that DNA evidence is found in about 5% of crime scenes. Grieve & Wiggins, *Fibers Under Fire: Suggestions for Improving their Use to Provide Forensic Evidence*, 46 *J. Forensic Sci.* 835, 835 (2001).

If an examiner gives an actual figure, inquire about the basis for that number. Bear in mind the “availability heuristic,” i.e., the notion that what is easier to remember is thought to be more probable or that have occurred more recently—even though it may not be; and the “similarity heuristic, i.e., the notion is that given a set of equally likely patterns, the pattern that is more similar to an expectation is thought to be more probable—even though it may not be. An investigator or examiner who makes up a precise-sound figure “off-the-cuff” may have serious credibility problems.

¹⁰² *Banks v. Powell*, 917 F. Supp. 414, 418 (E.D. Va. 1996), dismissed, 101 F.3d 695 (4th Cir. 1996) (“The absence of fingerprint evidence is a fact the jury may consider, but there is no constitutional or statutory requirement that police take fingerprints or employ every investigative technique known for each crime suspected.”). See *State v. Wells*, 103 Idaho 137, 138, 645 P.2d 371 (Ct. App. 1982) (no requirement that prosecution leave no stone unturned in investigation of crime).

Read the witnesses' statements, if any, carefully. Ask any witnesses who testify what the bad guy touched, moved, or discarded. Find out what the bad guy must have touched to enter, leave, or commit the crime. If you can get a witness to say, for example, "I saw the defendant look into the apartment window. His hand was on the glass," you then have a much stronger argument that the witness has identified the wrong person if the crime scene technicians either did not test the window glass for latent prints or did test the glass, found latents, but they were not your client's. If the technician says the window was too dirty to get good latents, or all they found were unidentifiable smears, then you have not helped or hurt your case.

Police should have looked for prints around the crime scene; at logical points of entry and exit; on light switches and door knobs; on objects that were moved or displaced during the crime; on weapons;¹⁰³ on objects discarded by the criminal at the scene, such as on the insides of discarded latex gloves;¹⁰⁴ on purses, wallets, safes, or money boxes if a robbery occurred and so on. If they have not looked in these logical places you can cross-examine the officers about how they were trained to process a crime scene and how they processed this crime scene, about what objects they seized and had processed for fingerprints and what objects they ignored.

Look for untested surfaces that are clean and smooth. If a surface is dirty, the investigator may respond by saying that dirty surfaces will tend to transfer dirt to the toucher's hands, not sweat from their hands to the surface. Surfaces that have been touched a lot may have multiple layers of fingerprints. The technician may not be able to separate one from the others; thus he did not try to examine this item. If the surface is textured, the investigator may respond that he would only be able to find parts of a fingerprint, but it will be too fragmented to be useful, thus he did not examine the item.

Look for places that are not exposed to dampness (rain, dew) or dehydration (in the hot sun, near a heat vent). If those surfaces are important, consult with an expert to find out whether the surface could have yielded latent prints, then cross-examine specifically on the techniques used for that surface.

Ask why the latent print examiner chose certain techniques, and not others, to locate latent prints. If there was a method that the examiner could have used, and did not, might using it have found a print that would have exposed the real bad guy?

¹⁰³ The author has seen several cases where police did not check fired bullet casings and explained that because of the heat produced when a bullet is fired and the friction against the chamber when it is ejected, no fingerprint will survive. Thus far, the author has found only one example of a fingerprint found on a fired bullet casing. See Wertheim, *Fired Shell Casing Print, The Detail*, <http://www.clpex.com/Articles/TheDetail/1-99/TheDetail87.htm> (Images and discussion at bottom of the page).

¹⁰⁴ See, e.g., DeForest, Gaensslen & Lee, *Forensic Science: An Introduction to Criminalistics* 339 (1983); Fisher, *Techniques of Crime Scene Investigation* 101-02 (6th ed., 2000); Olsen, *Scott's Fingerprint Mechanics* 129-133 (1978).

What if the Client wants something tested?

Sometimes you will find in reviewing the police reports that the police have seized some item as evidence and have not checked it for fingerprints, or note that they recovered a latent print, but there is no examiner's report about whether it matches anyone involved in the case. Your client may want to have the item tested.

As a practical matter, you may be able to ask the State Lab or police department to test the item or allow an expert of your choice access to the item to test it. There are some chain of custody issues if the item is sent to your expert's lab. You can ask that prints be compared to specific people if your client believes a specific other person committed the crime, or you may be able to arrange to have unknown prints run through AFIS to see if they can be matched at all. Computer matching technology is constantly changing—what could not have been matched 5 years ago, might be able to be matched today. If the prosecutor or laboratory is not amenable to testing, you may need to seek an order from the trial court.

This is a tricky area—you are taking a gamble that the result will not be inculpatory. You need to warn the client about this risk, in writing, and have the client confirm, in writing, that he still wants you to have the item tested. Document this carefully to satisfy your malpractice insurer and your state grievance committee or bar overseers. In the author's opinion, it is your client who will ultimately have to do the time if the jury convicts—if he wants something tested, is warned of the risk, and still wants it done—try to do it.

There is a similar danger if you raise a "no print" defense and the police have seized items that they can test.¹⁰⁵ They may do so, even during the trial, and the result may be inculpatory. At that point, you may have a very good confirmation bias argument, however.

Conclusion

Defense counsel should view a fingerprint match with the same skepticism he or she would use on a witness statement, confession, or any other forensic evidence. Fingerprint matching is not fool proof, nor is it fraud proof. It depends on the skill, opinions, and integrity of the police technicians who gathered the evidence at the crime scene and of the fingerprint examiners. Use *Daubert/Plaza* challenges when appropriate and make sure that the experts in your case really are qualified to give this devastating testimony against your client.

In a "no print" case, after you breathe a sigh of relief that your client's prints do not link him or her to the crime, think about whether you can craft an argument that the police did not find other prints because of a mistake, overconfidence, or ineptitude. If so, use the "no print" defense as part of a theme for your defense.

¹⁰⁵ See e.g. DeForest, Gaensslen & Lee, *Forensic Science: An Introduction to Criminalistics* 339 (1983); Fisher, *Techniques of Crime Scene Investigation* 101-02 (6th ed. 2000); Olsen, *Scott's Fingerprint Mechanics* 129-133 (1978).

Glossary

- AFIS—Automated Fingerprint Identification System (In a California case, the prosecution admitted the AFIS system has an error rate of 70-75%. Opposition to Motion to Suppress, *State v. Nawi*, SCN: 176527)
- APIS—Automated Palmprint Identification System
- Clarity—quality of the three-dimensional fingerprint details found in a two-dimensional rolled or latent fingerprint
- Detail, first level—overall friction ridge pattern of the fingerprint
- Detail, second level—specific friction ridge path in the fingerprint
- Detail, third level—small ridge shapes and relative pore locations in a fingerprint
- Double tap—a latent print consisting of the same fingerprint overlaid on itself with two distinct applications of pressure.
- Edgeoscopy—comparison of the edges of the friction (papillary) ridges proposed by Salil K. Catterjee as an adjunct to traditional point comparisons. The method has problems with distortion of the edges by pressure on the finger when leaving an inked or latent impression. It is also hard to find this level of detail in latent or inked impressions.
- Galton ridges—the line-like structures on the skin of the palm side of the finger past the distal (the last) joint.
- Mark—term used in the U.K. to refer to the imprint of a friction ridge surface recovered from a crime scene.
- “One Dissimilarity Doctrine”—any disparity that cannot be explained by natural phenomena is sufficient to prevent a positive latent match.
- Poroscopy—comparison of the microscopic pore openings in the friction ridges. Pores can have different shapes, and are located in various places on the ridge at varying distances. Poroscopy was proposed by Edmond Locard in the 1900s. It was used in the case of Boudet and Simonin in 1912.
- Poroscopy is uncommon because many latent prints do not show the pores. Some latent print lifting techniques damage or destroy the pore structure. Similarly, inked impressions often do not show pore detail.
- Print—term used in the U.K. to refer to the imprint of a friction ridge surface taken under controlled conditions.
- Ridgeology—the term was coined by David Ashbaugh, a constable in the Royal Canadian Mounted Police in *Premises of Friction Ridge Identifications*, an article published in 1983. Ridgeology analyzes the pattern of friction ridges and does not depend on any number of common specific “points”
- SWGFAST—Scientific Working Group on Friction Ridge Analysis, Study & Technology
- Two-finger identification—a latent print consisting of two different fingerprint on top of each other.