

July 20, 2009

Elisabeth A. Shumaker
Clerk of Court

PUBLISH

UNITED STATES COURT OF APPEALS
TENTH CIRCUIT

UNITED STATES OF AMERICA,

Plaintiff - Appellee,

v.

No. 08-2098

ROBERT ABDUL BAINES,

Defendant - Appellant.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE
DISTRICT OF NEW MEXICO
(D.C. No. 2:06-CR-01797-MV-3)

Terri J. Abernathy, Assistant United States Attorney, (Gregory J. Fouratt, United States Attorney, with her on the brief), Las Cruces, New Mexico, for Plaintiff - Appellee.

Zachary A. Ives, Freedman Boyd Hollander Goldberg & Ives P.A. (Molly Schmidt-Nowara, with him on the briefs), Albuquerque, New Mexico, for Defendant - Appellant.

Before **McCONNELL**, **HOLLOWAY**, and **BALDOCK**, Circuit Judges.

HOLLOWAY, Circuit Judge.

After a jury trial in federal district court, defendant-appellant Robert Abdul Baines was convicted on five counts: conspiracy to possess marijuana with intent to distribute; possession of marijuana with intent to distribute; possessing a firearm in furtherance of a drug trafficking crime; possession of a firearm after former conviction of a felony; and possession of ammunition after former conviction of a felony. He was sentenced to a total of 123 months of imprisonment to be followed by three years of supervised release, and he was ordered to pay immediately a special fee assessment of five hundred dollars.

We have jurisdiction under 28 U.S.C. § 1291. Concluding that the district court did not abuse its discretion in allowing the government to present expert evidence that a thumb print found on some of the contraband recovered by the authorities was a match to Baines' print, we affirm the judgment of the district court.

I

Because the sole issue Baines raises in this appeal is the admissibility at trial of fingerprint analysis as expert testimony, a brief overview of the facts underlying the convictions, as established in the trial testimony, will suffice to provide context for our discussion.

Baines recruited two young women to travel with him and two male friends from Pennsylvania to Arizona, offering the women \$1,000 each for the trip. Both young women testified at trial that they realized that the purpose of the trip was to

transport drugs, although Baines did not tell them any details. At one point during the trip Baines said he was “in the business,” which they understood to be a reference to drug trafficking. The travelers used two rented vehicles for the trip, a “tannish” Ford sedan and a minivan. The two women and Baines were in the Ford for the trip to Arizona, with the women taking turns driving, while the other two men were in the minivan.

Upon arriving in Phoenix, the group spent the night in a motel and went shopping for awhile the next day. Baines contacted someone he referred to as “Felix,” and had one of the young women take down directions to a place where they would meet with Felix in Tucson. After the group spent part of the day at a place the women assumed to be the residence of Felix, the three men left in the Ford. Upon their return, the young women were told to get ready for the return to Pennsylvania. They were both seated in the Ford when they saw Baines approach carrying a blue bag. The woman in the driver’s seat unlatched the trunk, and both could feel things being put in the trunk and moved around, though neither of them saw what was happening with the trunk lid open. For their return journey, Baines chose to ride in the minivan, leaving the two women as the only occupants in the Ford.

Baines had told the two young women to plan a route for their trip back to Pennsylvania. One of them decided that they should go through Texas rather than return the way that they had come. That decision proved fateful because this

route took them through Las Cruces, New Mexico, and near there they unexpectedly entered a border checkpoint.

When the trunk of the Ford was opened at the border checkpoint, the agent immediately noticed the scent of fresh marijuana. The car was taken to the secondary inspection area, where a dog trained to detect illegal drugs alerted to the trunk. One of the agents had asked one of the women about the van that was behind them at the checkpoint and learned that the two vehicles were traveling together. One of the occupants of the van confirmed that fact. Accordingly, the van and its three occupants were also directed to the secondary inspection center. Officers found packages of marijuana in each of three bags, two laundry bags and a black duffel bag, and the black duffel bag also contained two pistols and ammunition. The two women were arrested.

When it appeared that the men were going to be released, one of the young women decided to tell the officers about defendant's role in arranging the trip and his apparent role in acquiring and loading the marijuana. Both women also told the agents that during the trip defendant had said that he was "in the business."

With the testimony of the two young women and other evidence, such as records of calls made from cell phones, the jury was persuaded to convict Mr. Baines of the drug counts. But neither of the women had seen Mr. Baines with the black duffel bag in which the guns and ammunition were found, and the officers had received information that another one of the men owned a bag of that

description. So the government relied on fingerprint evidence to connect Baines with the guns and ammunition.

Two fingerprints were discovered on one of the magazines found with the two pistols in the black duffle bag. Defendant filed a motion before trial to bar the government from presenting evidence that a fingerprint specialist had determined that one of the recovered “latent” prints matched the “known” fingerprint of defendant Baines. (See *infra* for an explanation of the two terms in quotation marks.) Defendant’s motion invoked Rules 104(a) and 702 of the Federal Rules of Evidence and *Daubert v. Merrill Dow Pharm., Inc.*, 509 U.S. 579, 593-94 (1993). Defendant requested a pretrial hearing on the admissibility of the government’s expert testimony, and the district court granted the request.

II

A

Two witnesses testified at the pretrial hearing on defendant’s motion to exclude the fingerprint evidence, Mr. Fullerton, the state-employed fingerprint examiner who later testified at trial, and FBI Agent Meagher, who is a fingerprint specialist with the bureau.¹ Agent Meagher’s testimony was wide-ranging,

¹Both expert witnesses had years of training and experience. Defendant did not challenge their qualifications as experts in the district court, nor does he on appeal.

explaining basic concepts underlying fingerprint identification, the procedure followed by fingerprint examiners, and branching out from there to respond to inquiries aimed at some of the factors suggested in *Daubert* as relevant to the consideration of expert testimony.

Agent Meagher defined “fingerprint” as the “ridged skin which appears on the palmar side of the hand for each of the fingers.” He used a photograph to demonstrate that the ridges are visible on the hand. He explained that the ridge pattern can then be “transferred to an object when it is touched, or intentionally recorded on a known fingerprint card.”

To explore the issues involved in fingerprint identification, it is first necessary to understand the difference between what the witnesses called latent prints and known prints. A known print is the kind that is made intentionally, as when a person is arrested. Law enforcement agencies and others taking fingerprints will attempt to get full prints of each finger. Agent Meagher explained that this seemingly simple task is actually not so simple; practice and training are needed to develop the skill of recording prints to obtain a clear and complete image. In previous years prints were normally taken by applying ink to the fingers and then applying the fingers to a paper card with a rolling motion. In recent years, some agencies have adopted a digital photo scanning technique in place of the old method. Even with trained personnel recording the prints, the quality of known prints varies substantially.

Latent fingerprints are partial prints like those found at crime scenes and often are invisible to the naked eye. One study determined that a latent print is only, on average, about 22% of a known print. III R. 52. The gist of defendant's challenge is that the government in this case did not establish that the method for matching the latent print at issue with defendant's known print was reliable.

The field of fingerprint identification ultimately rests on two premises: that each individual's fingerprints are unique and that the unique pattern of a person's prints does not change over time. These basic principles are essentially unchallenged in this appeal. Nor does defendant contest that the latent print found on the magazine in this case was accurately reproduced for analysis. Defendant's challenge is to the reliability of the process of comparing the latent print to known prints.

Agent Meagher described the approach used in fingerprint comparison. The first step a fingerprint examiner takes is a close observation of the characteristics of the latent print under study. A latent print may have three levels of detail. The first level is the "ridge flow" or pattern of the ridges. There are three basic patterns, known as arch, loop, and whirl. An "individualization"² cannot be based on this level alone although a decision to exclude a candidate

²Agent Meagher explained that in the "fingerprint discipline" the term "individualization" is used (instead of "identification") and that the term means that the examiner has identified the "donor" of the latent print to the exclusion of all other possible donors. III R. 24-25.

may be made on Level 1 detail alone.

The second level of detail is “the ridge path of the individual ridges.” *Id.* at 26. The examiner chooses ridges on the print, follows them, and makes observations. For example, the examiner may note points where a ridge ends or divides into two ridges. Agent Meagher testified that an examiner can “individualize” or establish an identity at this point. The third level of detail is observed by “zooming in” more closely to gather additional information about an individual ridge, including features like sweat pores and differences in size and shape of the ridge.

The process used for determining whether a latent print matches a known print has been given the acronym ACE-V, with the letters standing for the steps in a four-stage process: (1) analysis, (2) comparison, (3) evaluation, and (4) verification. In the initial analysis step, the examiner looks at the latent print and the known print separately. The purpose of this step is to discern characteristics at all three levels of detail and to evaluate the quality and quantity of information on each print. The examiner may find a disparity in characteristics that compels the conclusion that the prints cannot be a match, or may find that one or the other – usually the latent – is of too poor a quality or simply reveals too little information for further examination to be fruitful. If, however, the examiner determines that there is nothing to exclude the possibility of a match and that the quantity and quality of the information is sufficient, then he moves to the next

step.

The second step in the process is comparison, a side-by-side examination of the latent print and the known print. The examiner looks for reasons to exclude the known print and for similarities between the two. As Mr. Fuller later explained in his trial testimony, the examiner at this stage is determining if there could be a match between the known print and the latent print. *Id.* at 389. If it appears possible that they might match, the examiner goes to the third step, evaluation, where the examiner actually tries to reach a conclusion as to whether there is a match or not.

Verification, the fourth stage, involves having a second examiner look at the prints being compared. In this appeal, defendant stresses that the verification process is not truly independent. Not only is the second examiner usually with the same law enforcement agency, but in this case at least the second examiner did not conduct a “blind” comparison, but rather was given all the work notes and other work product of the first examiner.

Agent Meagher was asked about the error rate for friction ridge identification. His answer (as to many questions during the hearing, all without objection) was a rambling narrative covering almost six pages of transcript. He began by positing that there are two types of errors, practitioner error and methodological error. He then pronounced by his *ipse dixit* that the subject of the hearing was methodological error, not practitioner error, and that the error rate for

the method was “either no error, or it’s a zero error.” III R. 87. He went on to acknowledge that practitioners do make mistakes, but then asserted that the “practitioner error rate goes to the individual, not to the whole of the practitioners applying the methodology.” It would be “inappropriate,” he testified, to “take the accumulation of those who have made errors and assign it to those who have not made errors,” thus at least implying that most practitioners have achieved a level of perfection that is rather rare, to say the least, in other complex human endeavors. Agent Meagher did go on to cite one published report in which 92 participants performed a total of 5,861 individualizations, out of which there were two errors, both of which were noticed and corrected by verifiers.

On cross-examination Agent Meagher testified that the FBI has no statistics from which error rates of its analysts could be calculated. He said that each analyst would know his or her error rate from the proficiency examination taken at the end of training and annually thereafter. With respect to errors in actual cases, Mr. Meagher first explained that there were three possible types of errors to consider: false or mistaken identifications in which the analyst incorrectly identifies a person as the source of a latent print; missed identifications, where the analyst fails to make an identification when she should have; and clerical errors. Of these, the first is the proper focus for the court, “the only error of consequence,” the agent testified. As to these “false positives,” Meagher testified that the FBI had “made, on average, about one erroneous identification every 11

years.” The total number of identifications made has been about one million per year, he continued, so that the known actual error rate was about one per eleven million identifications. *Id.* at 99. He further testified that he knew of no erroneous identifications in proficiency testing of the FBI’s examiners in the last ten years that he has been in a managerial position to have access to that information. There were one or two missed identifications during the ten-year period.

The second witness at the *Daubert* hearing was Mr. Fullerton of the New Mexico forensic lab, who conducted the actual process in this case. His testimony covered some of the same ground as Agent Meagher’s in describing the ACE-V procedure in general, for example. Fullerton also testified that he was able to conclude that the latent print at issue matched the known left thumb print of defendant Baines.

Mr. Fullerton testified that he could not even determine the basic pattern of the latent print at level 1 because the left side of the print was not available. The latent print was an impression of such a small portion of the print that Fullerton could not say whether it was a part of a left slant loop or a whorl. *Id.* at 123-24. Moreover, Fullerton testified, in this case the known prints were also of poor quality. However, on re-direct examination at trial he further explained that, although the prints of several fingers on Baines’ card were very poor images, the

left thumb print was of good quality and could be matched to the latent print.³ *Id.* at 416.

Notwithstanding these challenges, Fullerton testified, he was able to conclude that the latent print was from Mr. Baines's left thumb, based on eleven points of comparison. Verification was accomplished by giving the data – and Fullerton's marks on the copies of the prints and other work notes – to another examiner in the same lab. Fullerton admitted that this was not an “independent identification” and that his sharing of his work product with the second examiner had suggested findings.

The defense presented no witnesses at the hearing.

B

The district court's ruling.

The district judge issued her ruling from the bench, followed later by a Memorandum Opinion and Order. In her written order the judge concisely summarized the parties' arguments and the testimony of Agent Meagher of the FBI and Mr. Fullerton of the state crime lab. Although the judge summarized this testimony and appears to have accepted it, she did not make formal findings. As

³A copy of the fingerprint card was admitted in evidence at both the *Daubert* hearing and at trial, and a copy of the exhibit is appended to the briefs. By looking at this exhibit, one can see that the image of the left thumb print is clearer than that of most of the other fingers, an observation that the jurors had the opportunity to make for themselves.

he does in this appeal, the defendant argued that the methods of fingerprint analysis have not been tested; that there are no established error rates; that fingerprint examiners do not adhere to uniform, objective standards; and that there is an absence of professional literature to support admission of testimony of fingerprint examiners.

The district judge did not directly address these arguments by defendant's counsel. The judge did say that her decision was based on the testimony of Agent Meagher, thus at least implicitly making findings consistent with that testimony. The judge concluded that government had met its burden and "shown by a preponderance of the evidence that the reasoning and methodology underlying latent fingerprint evidence is scientifically valid and was properly applied by Mr. Fullerton to the facts at issue in this case." The judge also noted her agreement with the cases cited by the government in support of its position. Accordingly, she held that the evidence was shown to be relevant and reliable, meeting the requirements of Fed. R. Evid. 702. In closing, the judge addressed the core of defendant's argument, that fingerprint analysis rests substantially on the subjective interpretations of the examiner. The judge said that this argument went to the weight of the evidence, not its admissibility, and she quoted *Daubert's* observation that "[v]igorous cross-examination, presentation of contrary evidence and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509 U.S. at 596.

At trial, Mr. Fullerton testified to his opinion that the latent print from the magazine matched the known left thumb print of defendant Baines.

III

As noted, the only issue in this appeal is whether the trial court should have excluded the fingerprint evidence. As with other evidentiary rulings, we review the district court's decisions to admit expert testimony only for abuse of discretion. *See Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999). The issue in this case is whether the district court properly fulfilled its duty, as established in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 597 (1993), to ensure that expert testimony “rests on a reliable foundation and is relevant to the task at hand.”⁴

General principles.

Expert testimony is admissible only if it is potentially helpful to the jury and “(1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.” Fed. R. Evid. 702. The burden of proof is on the proponent of the evidence, here the government.

The Court has suggested some factors, which are not necessarily

⁴The district judge has discretion also in determining how to perform the “gatekeeper” function mandated by *Daubert*, *see Kumho Tire*, 526 U.S. at 152, but no contention is made in this appeal that the judge abused her discretion in that regard. The only contention is that the judge reached the wrong conclusion.

exhaustive, that will be helpful to the trial courts in determining whether proposed expert testimony is based on reliable methods and principles: (1) whether the particular theory can be and has been tested; (2) whether the theory has been subjected to peer review and publication; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique's operation; and (5) whether the technique has achieved general acceptance in the relevant scientific or expert community. *Daubert v. Merrill Dow Pharm.*, 509 U.S. 579, 593-94 (1993). These factors do not constitute a “definitive checklist or test.” *Id.* at 593. The gatekeeping inquiry must be “tied to the facts of a particular case.” *Id.* at 591. The factors “may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, and the subject of his testimony.” *Kumho Tire*, 526 U.S. at 150.

Daubert was limited to scientific evidence. In *Kumho Tire Co.*, the Court held that the district courts' “gatekeeping” obligation as described in *Daubert* applies to all expert testimony and that in performing this function in particular cases, the district courts may consider the specific *Daubert* factors to the extent relevant. The Court specifically noted that “no clear line” divides “scientific” and “technical or other specialized” knowledge, all of which are treated together under Fed. R. Evid. 702. 526 U.S. at 148.

Defendant's argument.

Defendant discusses each of the *Daubert* factors. First, defendant asserts that fingerprint identification lacks objective standards and so must rely largely on the subjective impressions of the individual examiner. Agent Meagher admitted that the FBI does not use any objective standard for the number of similarities between a latent print and a known print necessary to make a match, and also that the subjective views of the individual examiner play a significant role in the process.

Meagher identified only two standards, both of which involve subjective determinations, defendant contends. First, Meagher testified that the examiner must not find any discrepancy between the two prints. But Meagher explained that “no discrepancy” really means no discrepancy without a “viable or plausible or valid explanation,” and whether an explanation meets that amorphous standard is a subjective judgment by the examiner. III R. 103-04.

Second, Meagher testified that there must be “agreement of sufficient friction ridge details in sequence,” but again it is up to the examiner to determine what is “sufficient.” Defendant cites one scholar who opines that the fingerprint community has been unable to answer the “crucial question” of “where the boundary lies between insufficient and sufficient correspondences.” Simon A. Cole, *More Than Zero: Accounting For Error in Latent Fingerprint Identification*, 95 J. Crim. L. & Criminology 985, 993-94 (Spring 2005) [hereinafter Cole, *More Than Zero*]. Indeed, one appellate court that held the

evidence admissible found that this factor weighed against admissibility. *See United States v. Mitchell*, 365 F.3d 215, 241 (3d Cir. 2004).

Turning to the other *Daubert* factors, defendant contends that the government failed to show that the process for latent fingerprint identification has been tested. As one judge said, “there have not been any studies to establish how likely it is that partial prints taken from a crime scene will be a match for only one set of fingerprints in the world.” *United States v. Crisp*, 324 F.3d 261, 273 (4th Cir. 2003) (Michael, J., dissenting).⁵

Defendant then turns to attacking the one survey and one study that the government, through Agent Meagher, proffered as evidence of reliability. In the survey, the FBI polled law enforcement agencies in all 50 states, the District of Columbia, Canada and the United Kingdom and learned that none of these agencies had ever found two different people with the same fingerprints and that none of the agencies had ever found that a latent fingerprint had been identified

⁵To clarify, both the dissenting judge in the case cited and counsel for Baines seem to be questioning the likelihood of a *mistaken* match of a latent print to a known print, rather than challenging the fundamental principle that each individual’s prints are unique. Indeed, the dissent included this quote from a treatise: “The issue is not the finding of two fingerprints that are alike, but rather the finding of prints from two different fingers that can be mistakenly adjudged to be alike by a fingerprint examination.” *Mitchell*, 324 F.3d 261, 274 (Michael, J., dissenting) (quoting David A. Stoney, *Fingerprint Identification: The Scientific Basis of Expert Testimony on Fingerprint Identification*, in *3 Modern Scientific Evidence: The Law and Science of Expert Testimony* § 27-2.3.2 (2002)).

with two different people.⁶ But, defendant says, this is not the same as saying that latent prints had never been misidentified.

The government also relied on a statistical study commissioned by the FBI and conducted by Lockheed Martin. Studying 50,000 prints and comparing each by computer against every other one, this study confirmed to an extremely high degree of probability that no two persons' fingerprints are identical.⁷ Again, defendant responds that is not at issue here.

In the second part of this study, an attempt was made to simulate latent prints by extracting about 20% of the data from each print and then comparing these partial prints to every other print in the database.⁸ The study concluded, with a very high degree of certainty, that there is almost no chance of ever finding two persons to have the same print, even when based on such partial prints. But defendant points out that a leading case found these "pseudo-latent" prints are "poor approximations of real latent prints." *Mitchell*, 365 F.3d at 237. Because the study did not adequately model real-world conditions, it does not provide significant support for the government's position, *Mitchell* held. *Id.* at 238.

⁶The FBI conducted this survey in preparation for the exhaustive *Daubert* hearing described in *United States v. Mitchell*, 365 F.3d 215, 223-225 (3d Cir. 2004).

⁷In *Mitchell*, the court noted that this study was also done specifically in preparation for the *Daubert* hearing in that case.

⁸The researchers had determined that the average latent print has just over 20% of the image of a known print.

Nor has fingerprint identification been subject to peer review, defendant continues. The government claimed that the verification step in the ACE-V process is peer review, but defendant insists this is not accurate. The Court in *Daubert* referred to a process that serves to assess the scientific validity of the methodology, which is not accomplished merely by having two persons apply the same technique, defendant argues. Consistency of results does not prove that the results are valid.

Moreover, the verification at issue here is not truly independent. In fact, it fails to show independence in two ways. Often, as here, the reviewer is associated with the first examiner and both are employed by the same agency. Second, unlike true peer review in the scientific process, the reviewer in this system is not independent in that he receives all of the examiner's work product, rather than perform the analysis himself. Indeed, Mr. Fullerton admitted in his testimony that this was not an "independent identification" and that giving his work product to the verifier was suggestive. In a truly independent verification process, the reviewer should not even know the conclusion of the first examiner, much less all the steps taken on the path to that conclusion, defendant asserts.

Next, defendant contends that the government failed to show a meaningful rate of error for latent fingerprint identification. Mr. Meagher testified that the rate of error for latent fingerprint identifications is zero, yet he admitted that innocent people have been convicted based on misidentification of their

fingerprints. Defendant cites one study that describes 22 cases of latent fingerprint misidentification. Cole, *More Than Zero*, 95 J. Crim. L. & Criminology at 985-987, 1001-16. Those include the much-publicized recent case where the FBI identified a Portland lawyer as a suspect in the terrorist bomb attack on the Madrid train station that killed 191 people, in spite of the fact that the Spanish authorities insisted, correctly, that the fingerprints did not match.⁹

Defendant criticizes Agent Meagher's attempt to distinguish between methodological error and practitioner error. Defendant argues that this is a false and meaningless distinction. One scholar, expressing the same view, said that because the method "depends so heavily on subjective human judgment . . . the method literally is the people who employ it." Jonathan J. Koehler, *Fingerprint Error Rates and Proficiency Tests: What They Are And Why They Matter*, 59 Hastings L.J. 1077, 1090 (May 2008). In any event, defendant goes on, the purported distinction is irrelevant under *Daubert*.

The government produced no evidence, defendant says, about error rates in real-world cases. Mr. Meagher admitted that the FBI's only actual error rates are based on proficiency tests the examiner candidates take under controlled conditions. The FBI does not compile error rates for examinations in real cases.

⁹The incident is described in Cole, *More Than Zero*, 95 J. Crim. L. & Criminology at 985-87, where the author notes that the mistaken identification was made by a total of four examiners, each of whom had considerable experience in the field.

As Judge Michael observed in his *Crisp* dissent, “where tests have attempted to imitate actual conditions, the error rates have been alarmingly high.” 324 F.3d at 275.¹⁰

In sum, defendant contends that the error rate is not zero, and the government failed to establish an actual error rate. Moreover, Baines argues that the effort by fingerprint examiners to create an aura of infallibility has the potential to seriously mislead jurors.

Finally, Baines argues that the government failed to show that fingerprint identification has been generally accepted in any unbiased scientific or technical community. It is not enough, according to him, that courts have accepted the technique.

The government’s argument.

The *Daubert* inquiry is a flexible one, the government notes, and the factors that case set out “do not all necessarily apply” in every case. *Kumho Tire*, 526 U.S. at 150-51. Every published decision to address this issue has found the evidence admissible. Fingerprint evidence has been admissible in this country for almost 100 years. The government urges this court to adopt the reasoning of *United States v. Mitchell*, 365 F.3d 214 (3d Cir. 2004), which it says was based

¹⁰Defendant does not directly challenge Meagher’s claim that the FBI analysts have cumulatively made only one mistaken identification every eleven years or one per each eleven million cases.

on substantially the same expert testimony, chiefly from Agent Meagher, that was presented in this case.

First, the *Mitchell* court found that the theories underlying fingerprint identification – that fingerprints are unique and permanent, and that identification matches can be made from fingerprints containing sufficient detail – are testable and have actually been tested by experience. On the second *Daubert* factor, the *Mitchell* court found that the ACE-V protocol constituted peer review and weighed in favor of admission.

The *Mitchell* court then considered the factor of established error rate for the procedure. Although a precise error rate has not been established, the court found that various estimates of the error rate all suggested that it was very low. The court cited evidence which the government characterizes as indistinguishable from the evidence in this record: the absence of significant numbers of false identifications in practice, the absence of “false positives” in an FBI survey of state agencies, and the Lockheed study discussed *supra*. Agent Meagher testified that the FBI’s own monitoring has revealed approximately one false identification every eleven years. About one million comparisons per year were made, he said, so that the error rate was approximately one for every 11 million comparisons.

On the fourth *Daubert* factor, the government points to testimony from Agent Meagher that the ACE-V procedure is a widely accepted standard governing operation of the methodology. Meagher also testified that additional

standards for conclusions are set by the Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFRAST), a professional group. Meagher testified that the standards for positive identifications of the latter group included agreement of sufficient friction ridge details in sequence, as determined by a competent examiner, and applied to “common area and both impressions” (a phrase that was not explained), and absent any discrepancies. III R. 94.

Finally, the *Mitchell* court found that general acceptance in the fingerprint community weighed in favor of admissibility. The court rejected the argument Baines makes here – that the community is not an impartial, scientific community. The *Mitchell* court held that, after *Kumho Tire*, this distinction is irrelevant. The general acceptance test of *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), merely asked whether the proposed method has “gained general acceptance in the particular field in which it belongs.” In *Mitchell*, the court said that, although *Daubert* held that Rule 702 had legislatively overruled *Frye*, at the same time the Court had acknowledged that “general acceptance” could still be a factor in the inquiry. 365 F.3d at 241.

Analysis.

Our task is not to determine the admissibility or inadmissibility of fingerprint analysis for all cases but merely to decide whether, on this record, the district judge in this case made a permissible choice in exercising her discretion

to admit the expert testimony.¹¹ Although this record raises multiple questions regarding whether fingerprint analysis can be considered truly scientific in an intellectual, abstract sense, nothing in the controlling legal authority we are bound to apply demands such an extremely high degree of intellectual purity. Instead, courts applying Fed. R. Evid. 702, *Daubert*, and *Kumho Tire*, are charged only with determining that the expert witness “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire*, 526 U.S. at 152.

To begin our analysis, we will consider the parties’ arguments and the record on the *Daubert* factors, with the understanding that they are not exclusive and that expert testimony does not have to meet all of them to be deemed sufficiently reliable. The inquiry is a “flexible one,” as *Daubert* itself teaches. 509 U.S. at 594. We also remain mindful that *Daubert* addressed evidence that was claimed to be scientific. *Kumho Tire* held that the trial court’s gatekeeping function applies to all expert testimony and noted that there is no clear line separating “scientific” knowledge from technical knowledge or knowledge based on experience. Nonetheless, the Court there said that “*some of Daubert’s* questions can help to evaluate the reliability even of experience-based testimony,”

¹¹We note, however that appellant’s counsel focuses his argument almost exclusively on fingerprint identification evidence in general, rather than on the specific identification in this case by Mr. Fullerton.

526 U.S. at 151 (emphasis added), strongly suggesting that the Court realized that some of the *Daubert* factors may be less helpful when the evidence under consideration is not scientific in the strict sense. Although the importance of the distinction is thus uncertain, we agree with the Third Circuit that fingerprint analysis is best described as an area of technical rather than scientific knowledge. *Mitchell*, 365 F.3d at 234.

The first *Daubert* question is whether the technique can be and has been tested. We have seriously considered defendant's argument that the testing of fingerprint analysis that has been reported mostly falls short of the rigors demanded by the ideals of science. On the other hand, the core proposition – that reliable identifications may be made from comparison of latent prints with known prints – is testable. And unquestionably the technique has been subject to testing, albeit less rigorous than a scientific ideal, in the world of criminal investigation, court proceedings, and other practical applications, such as identification of victims of disasters.

Thus, while we must agree with defendant that this record does not show that the technique has been subject to testing that would meet all of the standards of science, it would be unrealistic in the extreme for us to ignore the countervailing evidence. Fingerprint identification has been used extensively by law enforcement agencies all over the world for almost a century. Fingerprint analysts such as Mr. Fullerton, who have been certified by the FBI, have

undergone demanding training culminating in proficiency examinations, followed by further proficiency examinations at regular intervals during their careers.

Although these proficiency examinations have been criticized on several grounds, most notably that they do not accurately represent conditions encountered in the field, we see no basis in this record for totally disregarding these proficiency tests.

In conclusion, on this record we believe that the first *Daubert* factor weighs somewhat in favor of admissibility, although not powerfully.

The second *Daubert* factor is whether the theory or process has been subject to peer review and publication. We find little in the record to guide us in consideration of this factor. Defendant argues persuasively that the verification stage of the ACE-V process is not the independent peer review of true science. Agent Meagher's testimony included some references to professional publications, but these were too vague and sketchy to enable us to assess the nature of the professional dialogue offered. In short, the government did not show in this case that this factor favors admissibility.

The third *Daubert* factor is the known or potential error rate of the procedure. As recited *supra*, testing has been done in training programs and other environments that are not shown to be accurate facsimiles of the tasks undertaken by fingerprint analysts in actual cases. Nevertheless, the accumulated data is impressive. Very few mistakes are reported in testing that trainees must complete

before progressing to actual casework. Mr. Fullerton, who made the actual identification in this case, testified that he has always attained a perfect score in his proficiency tests.

More significantly, Agent Meagher testified to an error rate of one per every 11 million cases, and the defense did not – either in the evidentiary hearing or in the briefs on appeal – challenge that testimony. There may have been erroneous identifications that never came to light. Defense attorneys rarely have the resources to hire independent experts for trial, and in the interests of finality our system has created obstacles to post-conviction review. But even allowing for the likelihood that the actual error rate for FBI examiners may be higher than reflected in Mr. Meagher’s testimony, the known error rate remains impressively low. We are not aware of any attempt to quantify the maximum error rate that could meet *Daubert* standards, but surely a rate considerably higher than one per 11 million could still pass the test. We conclude that the evidence of the error rate on this record strongly supported the judge’s decision to admit the expert testimony.

The fourth *Daubert* factor is the existence and maintenance of standards controlling the technique’s operation. On this point, we are persuaded by the analysis of the Third Circuit in *United States v. Mitchell*, 365 F.3d at 241. The ACE-V system is a procedural standard but not a substantive one. Critical steps in the process depend on the subjective judgment of the analyst. We hasten to

add that subjectivity does not, in itself, preclude a finding of reliability. But in searching this record for evidence of standards that guide and limit the analyst in exercise of these subjective judgments, we find very little. Because in the end determination of this factor is not critical to our decision, we will assume *arguendo* that this factor does not support admissibility.

The fifth *Daubert* factor is whether the technique has attained general acceptance in the relevant scientific or expert community. Conceding the general acceptance of fingerprint analysis by law enforcement officials nationwide and internationally, defendant contends that fingerprint analysis has not been accepted in “any unbiased scientific or technical community” and cites to the *Daubert* formulation of the standard, which was limited to the “relevant scientific community.” 509 U.S. at 594. This distinction is significant in this case because the field of fingerprint analysis is dominated by agents of law enforcement, with apparently little presence of disinterested experts such as academics.

But in *Kumho Tire*, the Court – dealing with proffered expert testimony that was characterized as technical rather than scientific – referred with apparent approval to a lower court’s inquiry into general acceptance in the “relevant expert community,” 526 U.S. at 156, and then the Court discussed its own search in the record for evidence of acceptance of the controverted test by “other experts in the industry.” *Id.* at 157. Consequently, while we acknowledge that acceptance by a community of unbiased experts would carry greater weight, we believe that

acceptance by other experts in the field should also be considered. And when we consider that factor with respect to fingerprint analysis, what we observe is overwhelming acceptance.

Defendant argues that many of the post-*Daubert* cases holding fingerprint analysis admissible placed so much weight on the general acceptance of the practice that they in effect applied the outdated standard of *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), the standard that *Daubert* held had been displaced by Fed. R. Evid. 702. We need not either accept or reject this contention, as we have examined this issue on the record in this case and have found guidance from other courts primarily in their discussions of other factors. We have remained mindful of *Frye*'s displacement, but also mindful that the Court specifically said in *Daubert* that general acceptance "can yet have a bearing on the inquiry." 509 U.S. at 594.

In reaching a conclusion after this process of focusing on each of the *Daubert* factors in turn, we must return to two overriding principles. The first is that our review here is deferential, limited to the question of whether the district judge abused her considerable discretion. The second is that the Rule 702 analysis is a flexible one, as both *Daubert* and *Kumho Tire* teach. The *Daubert* factors are "meant to be helpful, not definitive," and not all of the factors will be pertinent in every case. *Kumho Tire*, 526 U.S. at 150-51. On the whole, it seems to us that the record supports the district judge's finding that fingerprint analysis

is sufficiently reliable to be admissible. Thus, we find no abuse of discretion. We apply the Third Circuit's *Mitchell* standard: "[T]he usual precepts of abuse-of-discretion review over the District Court's decision to admit the government's expert testimony." 365 F.3d at 234.

In closing, we echo the thoughts of Judge Pollak, who said regarding the desirability of research to provide the scrutiny and independent verification of the scientific method to aid in assessing the reliability of fingerprint evidence, that such efforts would be "all to the good. But 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." *United States v. Llera Plaza*, 188 F.Supp.2d 549, 572 (E.D. Pa. 2002).

Conclusion

Having found no abuse of discretion in admission of the disputed evidence, the only issue raised in this appeal, we AFFIRM the judgment of the district court.