

IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

UNITED STATES OF AMERICA :  
v. : CRIMINAL NO. 96-00407  
BYRON C. MITCHELL :

GOVERNMENT'S COMBINED REPORT TO THE COURT AND  
MOTIONS IN LIMINE CONCERNING FINGERPRINT EVIDENCE

The United States of America, by its attorneys Michael R. Stiles, United States Attorney for the Eastern District of Pennsylvania, and Paul A. Sarmousakis, Assistant United States Attorney, hereby files its combined Report to the Court and Motions *In Limine*. The government submits that at the conclusion of a hearing conducted in this matter and after submissions of proposed findings of fact and conclusions of law, this Court will have before it a record sufficient upon which to grant the government's motions, and which justifies 1) the exclusion of James E. Starrs as a defense expert witness, 2) the Court taking judicial notice of the fact that fingerprints are unique to individuals and permanent, and 3) government experts' testimony as to data and fingerprint analyses and comparisons establishing that both of the defendant's thumb prints were left on the stolen getaway car.

I. INTRODUCTION

Trial in this matter was scheduled for Monday, November 2, 1998. On October 27, 1998, defendant filed two motions *in limine*. On October 30, 1998, government counsel received

notice that the defense intended to call a purported “expert in the field of fingerprint analysis [who] will testify to his opinion that there is no scientific basis for a claim of individuality in the matching of fingerprints, and that, as such, the identification made in this case is scientifically invalid.”

EXHIBIT 1<sup>1</sup> After a conference call with the Court, which resulted in a continuance of the trial date, the government was advised that the basis of Starrs’ “opinion is 1) the absence of any scientific research or studies which would support the claim of individuality in the matching of fingerprints, and 2) the highly subjective nature of fingerprint analysis.” EXHIBIT 2 In its Response to the government’s Motion for Continuance of the Hearing and Trial Date, the defense raised the issue of whether or not a government fingerprint expert should be allowed to testify at all and that “at the core of the government’s expert’s opinion is the untested hypothesis that it is impossible for two or more people to share as many as nine fingerprint characteristics in common.” Defendant’s response at 4-5. The government assumes that the term “fingerprint characteristics in common” refers to points of identification.<sup>2</sup>

Therefore, it appears that the defense contends 1) that there is no scientific basis for a claim of individuality of fingerprints, 2) that there is no scientific basis for the opinion that it is impossible for two or more people to have in common as many as nine fingerprint characteristics, 3) that there is no scientific basis to support the hypothesis that nine matching characteristics are

---

<sup>1</sup>“EXHIBIT” refers to 2 volumes, labeled *Daubert* EXHIBITS, supplied to the Court and the defense, but not yet filed of record because of possible updates and additions. The Exhibit List is attached hereto as ATTACHMENT A.

<sup>2</sup>If not, the defense position is meaningless since general pattern classifications alone are not the basis for positive fingerprint identifications and furthermore, that all fingerprints contain characteristics that are common, i.e. ending ridges, bifurcations, etc. It is the type of characteristics, their position, direction and relationship that must be in agreement before an expert can opine that two fingerprints were made by the same person.

sufficient to make an absolute identification, 4) that fingerprint analysis (which the government believes to mean the identification stage, that is, the matching of fingerprint characteristics, also known as points of identification) itself is highly subjective and therefore unreliable, and 5) that therefore, the government's experts should be not be allowed to testify at trial.

The government argues that the only "expert" who should be excluded at trial is Starrs himself. Indeed, it is the defendant who is advancing "novel" expert testimony which is "fausse." However, case law in this Circuit suggests that a sufficient record must be established to sustain this Court's exercise of its discretion in excluding Starrs. What follows is a discussion of the law, the science of fingerprints and Professor Starrs.

## II. THE LAW

### A. EVALUATING SCIENTIFIC EVIDENCE AND THE EXPERT OFFERED TO OPINE ABOUT THE SCIENCE PRIOR TO DAUBERT

From 1923 until 1993, scientific evidence and the experts offered by parties to testify about the scientific evidence were generally controlled by *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). It is beyond dispute that the *Frye's* "general acceptance" standard or test has been the controlling standard or test used by the majority of the federal and state courts in the United States. In fact, fingerprint evidence had been accepted by many courts even before *Frye* was decided. See II D, *infra*. The defendant is unable to credibly assert that fingerprint science does not meet *Frye's* "general acceptance" standard which, as noted *infra*, is one of the flexible *Daubert* factors to be considered by this Court.

B. THE DAUBERT<sup>3</sup> EQUATION AND THE KUMHO<sup>4</sup> ANSWER

*Daubert* established that the Federal Rules of Evidence, which became effective in 1975, superseded the general acceptance test of *Frye*. 509 U.S. at 587-88. Rule 702 provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Although the *Daubert* Court limited its discussions to the scientific context, it noted that the Rule “also applies to technical or other specialized knowledge.” *Id.* at 590 fn.8. In light of *Kumho*, the applicability of *Daubert* to technical or other specialized knowledge is settled. In *Kumho*, the district court<sup>5</sup> excluded the expert and was reversed on appeal.<sup>6</sup> The Supreme Court in *Kumho* found the circuit court had erred, reversed, and upheld the exclusion of the expert witness.

The *Daubert* Court found that

a rigid ‘general acceptance’ requirement would be at odds with the ‘liberal thrust’ of the Federal Rules ... [that did] not mean ... that the Rules themselves placed no limit on the admissibility of purportedly scientific, [technical or other specialized knowledge] evidence [nor] is the trial judge disabled from screening such evidence. To the contrary, under the Rules the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.

---

<sup>3</sup>*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

<sup>4</sup>*Kumho Tire Company, Ltd. v. Patrick Carmichael*, 1999 W.L. 152275 (U.S.), which was decided 3/23/99, as predicted by the government in its Motion for Continuance of the Hearing and Trial Date.

<sup>5</sup>923 F. Supp. 1514 (S.D.Ala. 1996).

<sup>6</sup>131 F.3d 1433 (11th Cir. 1997).

*Id.* at 509 U.S. at 588-89 (footnotes omitted).

The subject of an expert's testimony must be 'scientific, [technical, or other specialized] knowledge'. The adjective 'scientific' implies a grounding in the methods and procedures of science. [The adjective 'technical' implies being derived from a technique or from a speciality or from science The word 'specialized' implies a grounding in training or employment in a special study or activity.] Similarly, the word 'knowledge' connotes more than just subjective belief or unsupported speculation. The term 'applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds'. Of course, it would be unreasonable to conclude that the subject of scientific testimony must be 'known' to a certainty; arguably, there are no certainties in science.

*Id.* at 589-90 (citation and footnote omitted).

*Daubert* also held that "[R]ule 702 ... requires that the evidence or testimony 'assist the trier of fact to understand the evidence or to determine a fact in issue'. This condition goes primarily to relevance." *Id.* at 591.

That [reliability and relevance] are embodied in Rule 702 is not surprising. Unlike an ordinary witness, ... an expert is permitted wide latitude to offer opinions, including those that are not based on firsthand knowledge or observation. ... **Presumably, this relaxation of the usual requirement of firsthand knowledge ... is premised on an assumption that the expert's opinion will have a reliable basis in the knowledge and experience of his discipline.**

*Id.* at 592 (emphasis added).

Faced with the proffer of expert scientific, [technical, or other specialized] testimony, then, the trial judge must determine at the outset, pursuant to Rule 104(a), whether the expert is proposing to testify to (1) scientific, [technical, or other specialized] knowledge that (2) will assist the trier of fact to understand or determine a fact in issue. This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically, [technically, or otherwise] valid and whether that reasoning or methodology probably can be applied to the facts in issue.

*Id.* at 592-593 (footnote omitted).

Rule 702 applies to more than “novel” or “unconventional evidence”:

Of course, well-established propositions are less likely to be challenged than those that are novel, and they are more handily defended. Indeed, theories that are so firmly established as to have obtained the **status of scientific law, such as the law of thermodynamics, properly are subject to judicial notice under Federal Rule of Evidence 201.**

*Id.* at 592 fn.11 (emphasis added).

The Court listed several, but by no means exclusive, criteria that courts can use in fulfilling their gatekeeper responsibilities: 1) Can the theory or technique be tested and what are the results; 2) Has the theory or technique been subjected to peer review and publication, noting that publication is but one element of peer review; 3) What is the known or potential error rate of the theory or technique, and 4) general acceptance. *Id.* at 593-94.<sup>7</sup>

Finally, ‘general acceptance’ can yet have a bearing on the inquiry. A ‘reliability assessment does not require, although it does permit, explicit identification of a relevant scientific, [technical or other specialized] community and an express determination of a particular degree of acceptance within that community’. Widespread acceptance can be an important factor in ruling particular evidence admissible, and ‘a known technique which has been able to attract only minimal support within the community,’ may properly be viewed with skepticism.

The inquiry envisioned by Rule 702 is ... a flexible one. Its overarching subject is the scientific, [technical or other] validity and thus the evidentiary relevance and reliability--of the principles

---

<sup>7</sup>The Third Circuit noted additional factors including the existence and maintenance of standards controlling the technique’s operation, the relationship of the technique to methods which have been established to be reliable, the expert witness’s qualifications, and the non-judicial uses to which the method has been put. *In re Paoli Railroad Yard PCB Litigation*, 35 F.3d 717, 742 n.8 (3d Cir. 1994); *Heller v. Shaw Industries, Inc.*, 167 F.3d 146, 152 (3d Cir. 1999).

that underlie a proposed submission. The focus, of course must be solely on principles and methodology not on the conclusions that they generate.

*Id.* at 594-95.

Rule 403 permits the exclusion of relevant evidence ‘if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury ....’ Judge Weinstein has explained: ‘Expert evidence can be both powerful and quite misleading because of the difficulty in evaluating it. Because of this risk, the judge in weighing possible prejudice against probative force under Rule 403 of the present Rules exercises more control over experts than over lay witnesses. Weinstein, 138 F.R.D., at 632.

*Id.* at 595

In reaching its decision, the Court in *Daubert* noted:

[I]t is true that open debate is an essential part of both legal and scientific analyses. Yet, there are important differences between the quest for truth in the courtroom and the quest for truth in the laboratory. Scientific conclusions are subject to perpetual revision. Law, on the other hand, must resolve disputes finally and quickly. The scientific project is advanced by broad and wide-ranging consideration of a multitude of hypotheses, for those that are incorrect will eventually be shown to be so, and that in itself is an advance. **Conjectures that are probably wrong are of little use, however, in the project of reaching a quick, final, and binding legal judgment--often of great consequence--about a particular set of events in the past.** We recognize that, in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes.

509 U.S. at 596-97.

*Kumho* not only held that Rule 702 and Daubert's factors applied to all "expert" witnesses, it expanded on the notions of reliability and the district court's gatekeeping responsibility.

We conclude that Daubert's general holding-- setting forth the trial judge's general 'gatekeeping' obligation--applies not only to testimony based on 'scientific' knowledge, but also to testimony based on 'technical' and 'other specialized' knowledge. We also conclude that a trial court may consider one or more of the more specific factors that Daubert mentioned when doing so will help determine that testimony's reliability. But, as the Court stated in Daubert, the test of reliability is 'flexible,' and Daubert's list of specific factors neither necessarily nor exclusively applies to all experts or in every case. Rather, **the law grants a district court the same broad latitude when it decides how to determine reliability as it enjoys in respect to its ultimate reliability determination.** See *General Electric Co. v. Joiner*, 522 U. S. 136, 143 (1997) (courts of appeals are to apply 'abuse of discretion' standard when reviewing district court's reliability determination). Applying these standards, we determine that the District Court's decision in this case--not to admit certain expert testimony--was within its discretion and therefore lawful.

*Kumho Tire Company, Ltd. v. Carmichael*, 1999 W.L. 152275 (U.S.) at 2-3 (emphasis added).

In *Kumho*, the district court initially strictly applied the *Daubert* factors, but upon reconsideration, noted that the *Daubert* factors must be applied flexibly. Even so, the district court excluded the proffered expert testimony on causation. *Id.* at 4.

\* \* \*

In Daubert, this Court held that Federal Rule of Evidence 702 imposes a special obligation upon a trial judge to 'ensure that any and all scientific testimony ... is not only **relevant, but reliable.**' 509 U. S., at 589. The initial question before us is whether this basic gatekeeping obligation applies only to 'scientific' testimony or to all expert testimony. We, like the parties, believe that it applies to all expert testimony.

*Id.* at 4 (emphasis added).

Neither is the evidentiary rationale that underlay the Court's

basic Daubert 'gatekeeping' determination limited to 'scientific' knowledge. Daubert pointed out that Federal Rules 702 and 703 grant expert witnesses testimonial latitude unavailable to other witnesses on the 'assumption that the expert's opinion will have a reliable basis in the knowledge and experience of his discipline.' *Id.*, at 592 (pointing out that experts may testify to opinions, including those that are not based on firsthand knowledge or observation). The Rules grant that latitude to all experts, not just to 'scientific' ones.

*Id.* at 5.

Experts of all kinds tie observations to conclusions through the use of what Judge Learned Hand called 'general truths derived from ... specialized experience.' Hand, Historical and Practical Considerations Regarding Expert Testimony, 15 Harv. L. Rev. 40, 54 (1901). And whether the specific expert testimony focuses upon specialized observations, the specialized translation of those observations into theory, a specialized theory itself, or the application of such a theory in a particular case, the expert's testimony often will rest 'upon an experience confessedly foreign in kind to [the jury's] own.' *Ibid.* The trial judge's effort to assure that the specialized testimony is reliable and relevant can help the jury evaluate that foreign experience, whether the testimony reflects scientific, technical, or other specialized knowledge.

We conclude that Daubert's general principles apply to the expert matters described in Rule 702. The Rule, in respect to all such matters, 'establishes a standard of evidentiary reliability.' 509 U. S., at 590. It 'requires a valid ... connection to the pertinent inquiry as a precondition to admissibility.' *Id.*, at 592. And where such testimony's factual basis, data, principles, methods, or their application are called sufficiently into question, see Part III, *infra*, **the trial judge must determine whether the testimony has 'a reliable basis in the knowledge and experience of [the relevant] discipline.'** 509 U. S., at 592.

*Id.* at 5 (emphasis added).

Daubert makes clear that the factors it mentions do not constitute a 'definitive checklist or test.' *Id.*, at 593. And Daubert adds that the gatekeeping inquiry must be 'tied to the facts' of a particular 'case.' *Id.*, at 591 (quoting *United States v. Downing*, 753 F. 2d 1224, 1242 (CA3 1985)). We agree with the Solicitor General that '[t]he factors

identified in Daubert 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.' ... The conclusion, in our view, is that we can neither rule out, nor rule in, for all cases and for all time the applicability of the factors mentioned in Daubert, nor can we now do so for subsets of cases categorized by category of expert or by kind of evidence. Too much depends upon the particular circumstances of the particular case at issue.

*Id.* at 6.

In certain cases, it will be appropriate for the trial judge to ask, for example, how often an engineering expert's experience-based methodology has produced erroneous results, or whether such a method is generally accepted in the relevant engineering community. Likewise, it will at times be useful to ask even of a witness whose expertise is based purely on experience, say, a perfume tester able to distinguish among 140 odors at a sniff, whether his preparation is of a kind that others in the field would recognize as acceptable.

We must therefore disagree ... that a trial judge may ask questions of the sort Daubert mentioned only where an expert 'relies on the application of scientific principles,' but not where an expert relies 'on skill- or experience-based observation.' We do not believe that Rule 702 creates a schematism that segregates expertise by type while mapping certain kinds of questions to certain kinds of experts. Life and the legal cases that it generates are too complex to warrant so definitive a match.

To say this is not to deny the importance of Daubert's gatekeeping requirement. The objective of that requirement is to ensure the reliability and relevancy of expert testimony. It is to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field. Nor do we deny that, as stated in Daubert, the particular questions that it mentioned will often be appropriate for use in determining the reliability of challenged expert testimony. Rather, we conclude that the trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable. That is to say, a trial court should consider the specific factors identified in Daubert where they are reasonable measures of the reliability of expert testimony.

The trial court must have the same kind of latitude in deciding how to test an expert's reliability, and to decide whether or when special briefing or other proceedings are needed to investigate reliability, as it enjoys when it decides whether that expert's relevant testimony is reliable. **Our opinion in Joiner makes clear that a court of appeals is to apply an abuse-of-discretion standard when it 'review[s] a trial court's decision to admit or exclude expert testimony.' ... That standard applies as much to the trial court's decisions about how to determine reliability as to its ultimate conclusion. ... Thus, whether Daubert's specific factors are, or are not, reasonable measures of reliability in a particular case is a matter that the law grants the trial judge broad latitude to determine.** See *Joiner*, supra, at 143. And the Eleventh Circuit erred insofar as it held to the contrary.

*Id.* at 6 (emphasis added; citations omitted).

In sum, [Kumho found] Rule 702 grants the district judge the discretionary authority, reviewable for its abuse, to determine reliability in light of the particular facts and circumstances of the particular case.

*Id.* at 9.

The importance of the district court's gatekeeping responsibilities was emphasized by Justice Scalia in his concurring opinion specifically addressed to that issue:

**I join the opinion of the Court, which makes clear that the discretion it endorses--trial-court discretion in choosing the manner of testing expert reliability--is not discretion to abandon the gatekeeping function. I think it worth adding that it is not discretion to perform the function inadequately. Rather, it is discretion to choose among reasonable means of excluding expertise that is *fausse* and science that is junky.**

*Id.* at 9 (emphasis added).

C. THE DEFENDANT'S AUTHORITY

The defendant argues that *United States v. Velasques*, 64 F.3d 844 (3d Cir. 1995), mandates that his expert be allowed to testify at trial. He is simply wrong. In *Velasques*, the district

court did not find as a fact or take judicial notice of the uniqueness of handwriting. Handwriting analysis can not summarily be equated with the science of fingerprints. Since the uniqueness and permanence of fingerprints is an established fact, defendant's expert should be precluded from testifying to the contrary. In *Velasques*, the expert<sup>8</sup>, a professor of law and a "critic" of handwriting analysis, was offered to assist the jury in understanding the limitations of the government's handwriting testimony. In this case, defendant's proffered testimony will only confuse the issue, mislead the jury and result in unfair prejudice to the government.

What was at issue in *Velasques* was the defense's opportunity to criticize the standards employed in handwriting analysis. Indeed, the government conceded in *Velasques* "that evidence that handwriting analysis is not scientifically credible 'goes to [the] weight' that such handwriting evidence should receive." *Id.* at 848.

Here, the government vehemently opposes the notion that Starrs' proposed testimony should be admitted and go to the weight the fingerprint evidence should be accorded. While defendant offers through his purported expert an attack on fingerprint evidence, such testimony must be ruled inadmissible since it is well-established that fingerprints are unique to an individual and permanent. The Court should take judicial notice of these facts. For the Court to allow Starrs to testify to a contrary view would only mislead the trier of fact. Moreover, as will be more fully discussed, *infra*, Starrs is wholly unqualified to offer an opinion about the comparison and identification stage in fingerprint analysis.

---

<sup>8</sup>Mark P. Denbeaux's qualifications have been the subject of criticism. *See* Moenssens, *Handwriting Evidence in the Post-Daubert World*, 66 UMKC L.Rev. 251, 255 n.11 (Winter 1997) (the *Velasquez* court based its decision to permit the testimony of Denbeaux, in part, on the "mistaken belief, from [Denbeaux's] testimony, that he was a social scientist and statistician, [an error which Denbeaux failed to bring to the court's attention]."

*Velasques* cannot and does not stand for the proposition that Starrs or someone in his stead can attack every theory of science, including those “so firmly established as ... scientific law ... properly ... subject to judicial notice.” *Daubert*, 509 U.S. at 592 n.11. The government has requested the Court to take such judicial notice and has and will supply the Court with the necessary information to support that finding under Rule 201(d) (the “court **shall** take judicial notice”) (emphasis added).

Of course, this pleading puts the defendant on notice, and the *Daubert* hearing will give him the opportunity to be heard. Rule 201(e).

#### D. PRIOR COURT DECISIONS ON FINGERPRINTS

No Court decision could be found which has rejected the science of fingerprints and the fact that fingerprints are unique and permanent.<sup>9</sup> The reported cases on fingerprints generally fall into: 1) those where fingerprint evidence is admissible, 2) those where defense challenges to fingerprint evidence were summarily rejected by the courts and 3) those where the courts have taken judicial notice of the fact that no two individuals have the same fingerprints.<sup>10</sup> Judicial notice was taken by the Court in many cases.<sup>11</sup> Court’s have “upheld the admissibility of fingerprint testimony

---

<sup>9</sup>The government is unaware of any reported case where the issues were tested under Rule 702 or *Daubert*.

<sup>10</sup>Although the science also supports the fact that no individual has identical prints on his or her digits, that fact is not at issue in this case since we have the defendant’s ten print cards which conclusively show that no two or more of his digits are identical.

<sup>11</sup>*See, e.g.: People v. Jennings* [96 N.E. 1077 n.1 (Ill. 1911)]; *Lamble v. State*, 96 N.J.L. 231, 114 Atl. 346 (1921); *State v. Rogers*, 233 N.C. 390, 64 S.E.2d 572 (1951); *State v. Bolen*, 142 Wash. 653, 254 P. 445 (1927); *Piquett v. United States*, 81 F.2d 75 (7th Cir. 1936), *cert. denied* 298 U.S. 664 (1936) (taken from *Andre A. Moenssens, James E. Starrs, et al., Scientific Evidence in Civil and Criminal Cases*, §8.09, at 519, n.5 (4th ed. 1995), herein referred to as “Moenssens’ Scientific Evidence.” The government understands that Andre A. Moenssens is the

in words amounting to judicial recognition.” Moenssens’ Scientific Evidence, §8.09 at 519 and cases cited at 519, n.6.

---

primary author of Chapter 8, titled Fingerprint Identification.

### III. FRICTION RIDGE FORMATION - UNIQUENESS AND PERMANENCE

#### A. INTRODUCTION

The term “*fingerprint*”<sup>12</sup> is used to describe the arrangement of ridged skin on the palmar (palm) side of the fingers. The permanent ridged skin arrangement is a result of complex physiological events, both genetic and environmental, which take place during the gestation period of the human skin development. This ridged skin on the end joint of the finger is the most common area from which fingerprints are recorded, classified and used to determine individuality. However, ridged skin also appears on the finger’s lower joints, the entire palmar surface of the hands and the soles of the feet, all of which can be used to establish individuality.

The ridged skin on the end joint of the fingers generally form certain patterns which are commonly referred to as arches, loops or whorls. This description of friction ridges is generally referred to as Level 1 Detail. EXHIBITS 5-1 through 5-3. While these terms are used to describe the general flow of the ridges, they do not by themselves provide the means to individualize. This skin on the end joint of the finger contains numerous ridges, not all of which are continuous flowing ridges. In fact, only very few are continuous flowing ridges, whereas, most of the ridges result in the creation of characteristics which are labeled with terms such as “ending ridge,” “bifurcation,” “enclosure” and “dot.” It is these features and their position, direction, and relationship that provides uniqueness and the means to individualize. This description of friction ridges is generally referred to as Level 2 Detail. EXHIBITS 5-4 through 5-6. The ability to individualize can also be established by using the ridges themselves. The ridge edge shape, sweat pores and other

---

<sup>12</sup>For purposes of the Daubert hearing, the term “fingerprints” include the ten digits of the hands, the palms of the hands and the soles of the feet.

information (Level 3 Detail) can be utilized along with Level 2 Detail to effect positive identifications and individualize. EXHIBITS 5-7 through 5-9.

B. EMBRYONIC VOLAR PADS AND FINGERPRINT PATTERNS

The physiology of human ridged skin creation begins with the development of volar (pertaining to, or the same side as, the palm of the hand or the sole of the foot) pads on the palms, fingers, soles and toes. EXHIBIT 3-1. These volar pads begin the process of creating ridged skin. As the volar pads regress, the friction ridges and their pattern formation begin to take shape and become more defined.

The fingerprint Level 1 Detail (arch, loop, whorl) is greatly influenced by the size, shape and direction of the volar pad. Much of this activity is controlled through genetic code and explains why twins and family members tend to have similar overall fingerprint classifications. As the pads regress and the dermal and epidermal skin begins to form the ridges, the embryonic environment has a direct effect on the random development of the friction ridges and their relationships. This process provides fingerprint Level 2 Detail and is used to distinguish between each finger's friction ridge arrangement, that is, unique points of identification. It is Level 2 Detail that permits identical twins' fingerprints to be individualized, that is, shown to be unique.

The dermal layer of skin is the basis for the friction ridge appearance on the epidermis and maintains the blueprint of how future skin growth is generated. This is the basis for permanency of the friction ridges, Levels 1, 2 and 3 Detail. As the body sloughs off old dead skin, the new skin is generated from this blueprint. EXHIBITS 3-3 and 3-4. The ability of the dermal skin to continuously provide this reproduction of the ridge's same shape and relationship is based on understanding the creation of the friction ridge units.



There exists significant studies of this process in both the medical and fingerprint fields. It is through scientific observation, studies and mathematical analysis occurring for over the last 100 years that fingerprints have been determined to be unique and permanent, thus providing the basis to individualize and effect positive identifications.

C. THE FRICTION RIDGE COMPARATIVE PROCESS<sup>13</sup>

The use of friction ridge impressions for forensic purposes falls into two categories. The first is the latent fingerprint developed on crime scene evidence. The objective is to identify the finger, thus the individual, responsible for depositing the latent impression on the evidence. The second is the set of all ten fingerprints recorded during an arrest. The objective is to determine the true identity of the individual by searching against a repository of fingerprints and identifying the individual with an existing known fingerprint record.

The scientific method for performing friction ridge comparisons is the same as that used by many other scientific comparative processes. The four major steps are 1) analysis, 2) comparison, 3) evaluation, and 4) verification. Although some practitioners within the fingerprint expert community use slightly different terminology to describe the unique approach with each step, the concepts are exactly the same.

The first step, *analysis*, requires the expert to examine and analyze all variables influencing the friction ridge impression in question. This begins with an understanding of friction ridged skin and the transition of the three dimensional skin structure to a two dimensional image. When examining latent fingerprints, several factors must be accounted for and understood. Some of these factors are the material upon which the latent print has been deposited, the development

---

<sup>13</sup>See, EXHIBIT 3-15.

process(es), pressure distortion, and external elements (blood, grease, etc.). The quantity and quality of the latent print ridges influences the examiners ability to perform the next phase. The conclusion of the analysis process is a determination as to whether sufficient information exists to proceed to the next phase.

The *comparison* process introduces the known exemplar with which the latent print is to be compared. At this point, there is also another analysis phase taking place. This analysis is of the known exemplar in an effort to determine the suitability for achieving the conclusion stated above. It is possible that the known exemplar may contain fingerprint images that are too heavily inked or smudged, and thereby unreliable, thus preventing a conclusive comparison. The comparison process begins with determining the general ridge flow and shape (Level 1 Detail) in an effort to properly orient the latent print with a corresponding area of the known exemplar fingerprints. This is generally followed by selecting key focal characteristics (Level 2 Detail), understanding their position, direction and relationship and then comparing this formation with the formations in the known exemplar. The quality and quantity of this information directly affects the ease or difficulty of this process.

The result of the comparison is the *evaluation* process or making a conclusion. The general fingerprint community refers to the conclusions drawn as being one of three choices. First, the two impressions (latent fingerprint and the known fingerprint) were made by the same finger of the same person. Second, the latent impression was not made by any of the fingers of the exemplar fingerprints. And third, a conclusive comparison could not be achieved, generally due to the lack of adequate clarity or the absence of comparable area in the known exemplar. In order to establish an identification decision, this process must insure that all of the fingerprint details are the same and

maintain the same relationship, with no existing unexplainable differences.

The final process is *verification*. The general rule is that all identifications must be verified by a second qualified expert. This verification process by a second examiner is an independent examination of the two fingerprint impressions (latent fingerprint and known exemplar fingerprint) applying the scientific methodology of analysis, comparison and evaluation described above.

#### D. TWINS

Because fingerprints have a genetic basis and therefore influenced by heredity, human twins' fingerprints tend to have very similar fingerprint classifications, Level 1 Detail. However, because of the human skin development process explained above in Part A, the friction ridge arrangement, Level 2 Detail, is unique to each finger of each twin. There have been numerous studies conducted of twins and each has concluded that their fingerprints are different and unique. Unfortunately, there have been some misleading statistical studies which indicate a high degree of conformity between twins' fingerprints, including one study that indicated that as many as 31 common characteristics existed between a set of twins' fingerprints. But when one clearly understands the process used by the authors of these studies, and after reviewing the actual fingerprints, the claim of 31 common characteristics can be quickly dismissed. The actual fingerprints claimed to have 31 common characteristics can easily be determined as different and unique.

EXHIBIT 4-1.

Since the capability of cloning has been recently achieved, the natural question posed by fingerprint experts was whether the cloned individual would have the same fingerprints as those of the donor. It is known that most primates have ridged skin and certain monkeys display

fingerprints similar to humans. (Monkeys' fingerprints are always whorls.) A study was performed of a monkey "cloned," using the nuclear transfer process, to determine whether they possess the same fingerprints. The conclusion was that the fingerprints are different and unique. EXHIBITS 4-2 and 4-3 (two monkeys' right fingers and palm print).

E. ERROR RATE

The error rate for the science of friction ridges being unique and permanent is zero because of the random development of the friction ridges.

However, it is known through observation that there are some fingerprints that do not fall within common classifications (arch, loop, whorl) and that have an appearance of scrambled friction ridges. Heredity is a factor, but the occurrence may be more associated with disease. Examples of this are dissociated ridges and dysplasia. An example of dissociated ridges appears in EXHIBIT 3-11. Even though these fingerprints are not classifiable in the normal sense, they are still unique and permanent.

Methods used to develop latent prints do not contribute to the existence of an error since they only provide the means to visualize the print's existing ridge arrangement. These methods do not negate the ability to properly assess the details required to arrive at a proper comparative conclusion. By following the scientific methodology of analysis, comparison, evaluation and verification, the error rate remains zero.

F. GENERAL ACCEPTANCE

Fingerprints, and the more general use of friction ridge impressions (palms and soles), have been in use as a means to individualize since the late 1800's, and have been accepted and used in the United States courts since the early 1900's. *E.g., People v. Jennings*, 252 Ill. 534, 96 N.E.

1077 (1911). The FBI began using fingerprints in 1924 to maintain a national repository of criminal's known fingerprints. In 1933, the FBI began conducting latent print examinations to support criminal investigations. Almost all developed countries today use fingerprints as a means to individualize. The underlying basis for this world-wide acceptance is that fingerprints (friction ridge arrangements) are unique and permanent. The overpowering evidence of this acceptance is that for over 100 years, there have never been found two different fingers to have the same fingerprint.

A survey (EXHIBITS 6-1, 6-3, and 6-5, copy of survey sheets ) was conducted in 1999 which confirms the overwhelming acceptance of fingerprint science. The three-part survey was sent by the FBI to all 50 states, Canada and the United Kingdom. Part A is a short seven-question survey on the use of fingerprints for the year 1998. These results show over 67 million known 10-print fingerprint records on file.<sup>14</sup> Over 8 million ten-print fingerprint searches have been conducted and over 460,000 latent fingerprint searches occurred. There has never been an instance where two fingerprints from different fingers or persons have been found to be identical. EXHIBIT 6-2.

Part B of the survey requested a 10-print fingerprint card search against each agency's 10-print fingerprint repository. There was no other individual identified in over 67 million 10-print fingerprint records. Two latent fingerprints were requested to be searched against the agency's 10-print repository. Even with this significantly reduced amount of fingerprint information, no other individual was identified. EXHIBIT 6-4.

Part C of the survey is a more in-depth continuation of Part A of the survey. The survey requested detailed information regarding the history of each agency's use of fingerprints and whether over time they had ever experienced two different individuals to have the same fingerprints,

---

<sup>14</sup>These figures do not include any figures from the FBI or other federal agencies.

either from the ten-print or latent print operations. The survey showed that from the earliest U.S. state (New York, 1904) and from the United Kingdom's beginning in 1901 until the present, there has never been an instance where two fingerprints from different fingers or persons have been found to be identical.<sup>15</sup> EXHIBIT 6-6.

The general acceptance of fingerprints, and the more general use of friction ridge impressions (palms and soles), as a means to individualize is without question. The survey specifically asked the question whether any two different individuals have been found to have the same fingerprints (Survey A, questions 3 and 5; Survey C, questions 9, 10a, and 19) and whether they specifically accept the fundamental principles of uniqueness and permanence as scientific basis for using fingerprints as a means to individualize (Survey A, Question 7). Without exception, the responses affirmed that friction ridges are unique and permanent, and that there has never been an instance where two fingerprints from different fingers or persons have been found to be the same.

#### G. STATISTICAL DATA

Since the earliest studies of fingerprints in the late 1800's and early 1900's, many individuals have attempted to develop a statistical model and calculate the probability of two fingerprints having the same friction ridge arrangement. A review of these efforts has revealed that only various elements of Level 2 Detail were used, yet even with this limited approach the probabilities of two individuals having the same fingerprint far exceed the world's current population (1 to about 64 thousand millions;<sup>16</sup> 1 to the ninth power of 50, a sum more than 1 million times the

---

<sup>15</sup>News of two different fingers being identical would flash around the relevant community and the world.

<sup>16</sup>Galton, Finger Prints (1892); Reprinted by Da Capo Press (1965) at Chapter 7, p. 110.

estimated 1930s world's human population of 1.4 billion;<sup>17</sup> and see other mathematical computations<sup>18</sup>). It appears there has never been a study performed which accounts for the use of both Level 2 and 3 Detail. It is believed that if this data were included into these probability calculations that the number represented would be yet more beyond comprehension.

In an effort to provide a more current assessment of this issue, the FBI conducted a statistical analysis of its approximately 35 million automated criminal ten-print fingerprint repository. The data used came from the newly developed Automated Fingerprint Identification System (AFIS). The analysis included a review by classification and a test to calculate the probability of two fingers having the same ridge arrangement. The fingerprint classification distribution (Level 1 Detail to include pattern and subordinate classification ridge counts) determined that the most populated "bin" contains only 831 (out of 34,564,832 records) individuals possessing the same classification formula for all ten fingers. There are 34,533,673 individuals that have unique 10-print classifications. EXHIBIT 6-7.

A 50K vs. 50K Fingerprint Comparison Test was performed using the first 50,000 left sloped loop fingerprints (1 digit irrespective of finger position). The AFIS system matchers were used to compare each fingerprint against the 50,000 file which resulted in 2.5 billion comparisons. The results of the calculations indicate that the mathematical probability of any other fingerprint in the data set being identical to any particular finger is less than 1 in 10 to the 97th power (1 chance in 1 followed by 97 zeroes). Once again, it must be noted that this data utilizes only Level 2 Detail

---

<sup>17</sup>Wentworth, Personal Identification (1932), at pp. 318-20.

<sup>18</sup>Roddy, Fingerprint Features: Statistical Analysis and System Performance Estimates, Proceedings of the IEEE. 1997 Sep; 85(9): 1390-1421.

and does not account for Level 3 Detail. The number will only be greater if Level 3 Detail are included, i.e, the probability of having two fingerprints from different fingers being the same would be even less. When this information is extrapolated to the world's population (estimated to be 5.9 billion) the probability is 59 chances in 10 to the 88th power, or 59 chances in 1 followed by 88 zeroes, or 1 chance in 1 followed by 86 zeros.

A second comparison test was performed using the same 50,000 set. However, the number of AFIS minutiae (Level 2 Detail) was reduced to the comparable number of an average AFIS latent print search. The same match process was used and the results indicate that the probability of a minutia subset of a non-mate fingerprint being identical to a minutia subset of any particular fingerprint is less than 1 chance in 10 to the 27th power (1 chance in 1 followed by 27 zeros) for small numbers of minutiae (in this case, small means four), decreasing to less than 1 chance in 10 to the 97th power (1 chance in 1 followed by 97 zeroes) for larger numbers of minutiae (in this case, larger means greater than eighteen).

Using the same data as above for the population of the earth, the approximate chance of any two minutia subsets of fingerprints on earth being identical is 59 chances in 10 to the 18th power or 59 chances in 1 followed by 18 zeroes, or 1 chance in 1 followed by 16 zeroes.

H. NATURAL LAWS AND PRINCIPLES SUPPORTING INTERSPECIES AND INTRASPECIES DIFFERENTIATION/VARIATION AND APPLICABILITY OF NATURAL LAWS AND PRINCIPLES TO FORENSIC SCIENCE

Variation in life is a generally accepted aspect of nature. The tremendous variation in the hereditary material - DNA - in populations and the impact of the environment on the expression of the genes of an individual make for an infinite number of possible combinations. This concept is so well appreciated that it is a common tenet among scientists, and the topic can be found in basic

text books on genetics, biology, and/or evolution. An example of one of the many well-respected text books regarding this matter is “Evolution” by M.W. Strickberger (Jones and Bartlett Publishers, 1990). The text contains discussions on the genetic material and the myriad ways it can be manifested in individuals and populations.

Consider the potential variation at the genetic level in humans. There are over 3 billion nucleotides (i.e., letter sites) in the human genetic code in every nucleated cell. There are four possible letters in the genetic code that can occupy each site. Therefore, the number 4 to the 3 billionth power combinations are possible, which is substantially more than all people who have ever lived. Obviously, not all sites will be variable; but it is estimated that at least 5 million sites differ between any two individuals (and this figure does not consider the different letters that can occupy the site and repetitive DNA). Most genes are polymorphic - that is there are variable forms in a population. Two-thirds to three-fourths of the genes may be polymorphic. The main force for this variation is mutation; even with modest estimates of the rate of mutation, at least one mutation will occur in each conception. Thus, variation is maintained.

To consider how many combinations of polymorphism can occur, the following example is given. A single gene with only four alleles (or genetic forms; for example, the alleles of eye color can be thought of as blue, green, brown, and gray) can produce 10 types. Only 100 genes with four alleles each can produce the number 10 to the 100th power combinations. Even this number exceeds the number of individuals in any species. This example pales in comparison, when one realizes that the human carries approximately 100,000 genes (and recall that two-thirds to three-fourths of the genes may be polymorphic).

In addition, the proteins, which are the expressed products of genes, have tremendous

variability, because there are at least 20 different protein subunits (i.e., amino acids) that can be used to build a protein. These expressed products make up the individual and the combination is

impacted by environmental effects, such as temperature, pressure, chemicals, nutrients, etc. It is not a passive relationship between the organism (or population) and the environment.

Although identical twins carry the same basic heredity blueprint, they demonstrate differences that, barring a somatic mutation, must be due to the environment. Twins are not the same exact height or weight, one can be left-handed while the other is right handed, and they have different fingerprints. Even if a few genes were involved in fingerprint development, a tremendous amount of pattern variability can occur. Moreover, this genetic variability potential is over-shadowed by the environmental effect on fingerprint patterns.

#### IV. THE GOVERNMENT'S EXPERTS

At the Daubert hearing, the government will call experts to reconfirm the facts that fingerprints are unique to individuals and are permanent, and that the methodology and practice of fingerprint comparison and identification are grounded in scientific principles. As a general matter, each expert will state that fingerprints are unique and permanent and that fingerprint comparison and identification are grounded in scientific methods and principles. EXHIBITS 7-1 and 7-2, the publications and articles contained in the expert witnesses' CVs, and the reference materials in EXHIBITS 11 through 14 list most of the reference materials any of the government's experts might rely on in forming their opinions. All of this evidence will establish and expand upon the summary contained in Part III herein. What follows is the identity of the Government's expert witnesses and their areas of expertise.

##### A. David R. Ashbaugh

Staff Sgt. Ashbaugh (CV at EXHIBIT 8-1) has 31 years of law enforcement experience, 25 of which has been spent working and researching in the fingerprint field, and is a

qualified expert in the field. An in-depth overview of fingerprint science and testimony can be found in Ashbaugh's book, Quantitative-Qualitative - Friction Ridge Analysis - an Introduction to Basic and Advanced RIDGEOLOGY (Published in Draft). EXHIBIT 10.<sup>19</sup>

B. Stephen B. Meagher

Meagher (CV at EXHIBIT 8-2) is a Latent Print Unit Chief in the Forensic Analysis Section of the FBI's Laboratory Division. He has 27 years experience, is a qualified expert and is a Lead Specialist of the FBI Disaster Squad [the primary function is to examine the disaster decedent's friction ridged skin (fingerprints, palm prints and footprints) in an effort to identify each disaster victim]. Meagher's testimony will center on the "general acceptance and "number of points" issues and computer and statistical data.

C. David L. Grieve

Grieve (CV at EXHIBIT 8-3) coordinates training for the Forensic Sciences Command of the Illinois State Police in Carbondale, Illinois. He has 34 years experience in the fingerprint field and is a qualified expert.

D. Pat A. Wertheim

Wertheim (CV at EXHIBIT 8-4) has over 23 years in law enforcement, has many years experience in the fingerprint field, and is a qualified expert.

E. Kenneth R. Moses

Moses (CV at EXHIBIT 8-5) has over 30 years law enforcement experience, has over

---

<sup>19</sup>The book is being supplied to the Court, along with proposed protective order, since the book is pending final publication and appropriate copyright protection within the United States and Canada. It has also been made available to the defense since they agree to the entry of the proposed order.

27 years experience in the fingerprint field, and is a qualified expert.

F. Bruce Budowle

Dr. Budowle (CV at EXHIBIT 8-6) is an expert in the following fields: Genetics, Population Genetics, Statistics, Quality Assurance/Standards (including error rates) and Validation of Forensic Science Applications. Dr. Budowle's testimony will center on how his areas of expertise and opinions support uniqueness, the methodology of fingerprint science, and the validation of statistical data.

G. Edward Raymond German

Special Agent German (CV at EXHIBIT 8-7) has 28 years experience and is a qualified expert in the fingerprint field. He is employed in the Latent Print Division of the U.S. Army Criminal Investigation Laboratory in Forest Park, Georgia, and is the Chairman of the Fingerprint Identification Subcommittee of the International Association for Identification (IAI).

H. Kenneth O. Smith

Smith (CV at EXHIBIT 8-8) has over 33 years experience and is a qualified expert in the fingerprint field. He is presently a Senior Forensic Latent Print Analyst at the U.S. Postal Inspection Service's National Laboratory in Virginia.

V. THE DEFENSE EXPERT<sup>20</sup>

A. THE CHALLENGED EVIDENCE

Byron Mitchell was charged in an indictment relating to an armored truck robbery that occurred in Philadelphia, Pennsylvania. The government's evidence at the first trial of this matter showed that the stolen getaway car which was used during the robbery, was abandoned by the three or more robbers. The car was recovered the same morning and through notes contained therein,

---

<sup>20</sup>Attached as EXHIBIT 9-1 is Starrs' vita supplied by the defendant.

which listed the license plate number of Byron Mitchell's, then girlfriend's, and now wife's car, Byron Mitchell was identified the same day. At trial it was established that a fingerprint expert from FBI headquarters traveled to Philadelphia and processed evidence, including the stolen getaway car. Positive identification of Byron Mitchell's left thumb print on the driver's side exterior door handle and his right thumb print on the knob of the column gear shift lever was established.

The defendant's attack on the "science" of fingerprints is both misguided and also wrong. The reference materials supporting uniqueness and permanence are so extensive that limiting the materials is a challenge in and of itself. Indeed, even the defendant's "expert," law professor James E. Starrs, has acknowledged that

The practical uses in law enforcement of a system of fingerprint identification derive from three well established premises: (1) the friction ridge patterns that begin to develop during fetal life remain unchanged during life, and even after death, until decomposition destroys the ridged skin; (2) the patterns differ from individual to individual, and even from digit to digit, and are never duplicated in their minute details; and, (3) although all patterns are distinct in their ridge characteristics, their overall pattern appearances have similarities which permit a systematic classification of the impressions.

From childhood to maturity, the friction skin patterns grow and expand in size. As an adult grows old, the finger patterns may shrink in size, but the characteristic points used to determine their individuality do not undergo any natural change in relation to one another. Rare cases of mutilation, or the occurrence of some skin disease, such as leprosy, may partially or totally destroy the epidermal ridges. If the destruction is only partial, it will not affect the value of impressions for identification purposes, since complete patterns are not needed.

The friction skin patterns are formed through a process of differential growth in the dermis layer of the skin. If the finger is superficially hurt or mutilated to a depth of not more than approximately one millimeter, the injury will reflect itself in the pattern as a temporary scar. Upon healing of the scarred area, however the pattern will return exactly to its same image as before the injury. If the injury inflicted is more serious and reaches into the dermis layer of the skin to damage the ridge molding "dermal papillae," a permanent scar will remain after the healing process is completed. Such permanent scars do not affect identification, as long as sufficient undamaged

skin remains.

Andre A. Moenssens, James E. Starrs et al., Scientific Evidence in Civil and Criminal Cases § 8.05 at 502 (4th ed. 1995). The defendant cannot now turn the absence of conflict or controversy in the fingerprint world, as evidenced by judicial opinions and the total lack of criticism or contrary opinion that fingerprints are unique and permanent, into evidence of conflict or controversy.

**B. PROFESSOR STARRS LACKS SUFFICIENT EDUCATION, TRAINING AND EXPERIENCE IN THE FIELD OF FINGERPRINTS TO QUALIFY AS AN EXPERT IN THAT FIELD**

---

-

The defendant's effort to create controversy where none exists and thus to justify his "novel position," focuses on the claimed expertise of Professor James E. Starrs. Professor Starrs himself has offered his CV to establish that he is qualified to testify as an expert in the fingerprint field.

The defendant's proffer in letters in support of Professor Starrs' expertise is both inadequate and misleading. It is inadequate because it does not offer factual support for Professor Starrs' contention that he is a "forensic scientist" with training and experience in any field -- much less -- fingerprint analysis.

It is misleading because it attempts to package Professor Starrs' training, experience and expertise as a law professor and pass it off as evidence of expertise in scientific and technical areas. In fact, as defense counsel seems to acknowledge, Professor Starrs' knowledge of fingerprints, such as it is, derives from his activities as a law professor, not from any formal training or experience as a forensic scientist or from technical or other specialized knowledge in the fingerprint field.

1. Professor Starrs' Background and Training.<sup>21</sup>

As his vita discloses, James Edward Starrs is a Professor of Law and Forensic Sciences at the George Washington University in Washington, D.C. He graduated from St. Johns University in 1958 with an undergraduate degree in English and a law degree. The following year, he received a masters degree in law from New York University. Since 1964, Professor Starrs has apparently not practiced but taught law at George Washington University Law School in Washington, D.C. In 1980, he was also given the title of Professor of Forensic Science on the faculty of the University's Columbia School of Arts & Sciences.

Professor Starrs' vita discloses no formal education in any science and none is referenced in his biographical entry in "Who's Who."<sup>22</sup> He has no reported training in the fingerprint field, including comparison analysis. He has no published articles in scientific journals detailing his own experiments, investigations of or experience with fingerprint evidence.<sup>23</sup> Moreover, neither the defense nor Professor Starrs (in his vita) lists a single instance in which Professor Starrs has been qualified as an expert in the fingerprint field.

Despite Professor Starrs' lack of education, training, and experience in the "relevant" field, the defendant maintains that Starrs should be recognized as an expert because he is a "forensic scientist." This argument is preposterous for two reasons: First, accepting Professor Starrs'

---

<sup>21</sup>Professor Starrs is not an immodest man, as his Declaration demonstrates. See footnote 24, *infra*.

<sup>22</sup> See Entry for James Edward Starrs, Marquis Who's Who, available in Westlaw, Marguis database.

<sup>23</sup>Starrs is a newcomer as a member of the International Association for Identification (IAI) and is not certified as a latent print examiner by IAI or any other organization.

definition of a scientist as one who postulates a hypothesis and then tests it through experiments (see EXHIBIT 9-2 at 13-14)<sup>24</sup>, no evidence exists to establish that he is a scientist. His lengthy vita does not note any scientific experiments Starrs has conducted or any studies he has published about any such experiments.

Second, even accepting *arguendo* that Professor Starrs is a "forensic scientist," he has not shown that he is a scientist with training and experience in the relevant field. Just as a scientist with a background and training in astrophysics could not claim expertise in cell biology simply by virtue of his status as a "scientist," so Professor Starrs cannot use the title "forensic scientist" as a basis for claiming expertise in any field of science which touches on forensic evidence and his fancy. Indeed, Professor Starrs should be the first to admit that expertise in one area does not translate into expertise for "other, unrelated purposes." *See Starrs, Frye v. United States Restructured and Revitalized: A Proposal to Amend Federal Evidence Rule 702*, 26 *Jurimetrics J.* 249, 258 (1986).

## 2. Professor Starrs' Writings.

An examination of Professor Starrs' publications, which are numerous, offers no additional support for the proposition that he is a fingerprint expert or a scientist of any kind. His vita lists seventy-five published articles on legal and historical issues.<sup>25</sup> None of those articles

---

<sup>24</sup>Declaration of James E. Starrs in Support of Defendant's Motion In Limine to Exclude Novel Ballistics Testimony at Trial, dated February 12, 1997, submitted in the Superior Court of the District of Columbia, in *United States v. Corey A. Moore*, Criminal No. F-10928-94.

<sup>25</sup>Of these, twenty-three mention legal issues having nothing to do with the forensic sciences. Thirty-two appear to be articles on various issues in the field of forensic evidence published in a newsletter published and edited by Professor Starrs and his wife, Scientific Sleuthing Newsletter. Twenty are articles published in various journals on legal issues affecting the admissibility of scientific evidence and the legal standards for qualifying experts to testify. The remaining ten record Professor Starrs' research on historical cases such as the shooting death of Meriweather Lewis in 1809 or the prosecution of Bruno Richard Hauptmann in the Lindbergh

describes any forensic examinations conducted by Professor Starrs or any conclusions he reached based on such examinations. Indeed, none of the articles appears to describe any independent research he did in any *area* of forensic science.

The defendant and Starrs both advance Starrs' citation in *Daubert*. The reference is to Justice Blackmun's opinion for the majority in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). At issue in *Daubert*, a product liability suit alleging that certain birth defects were caused by the drug Benedictin, was whether the admissibility of expert scientific testimony in a federal trial was governed by the common law *Frye* standard or, instead, the standard under the Federal Rules of Evidence. The Court held that in federal trials the Federal Rules of Evidence, and not *Frye*, set the appropriate standard.

*Daubert* thus presented a discrete legal issue on a point of evidence for resolution by the Court. While it is true that the Court cited one article written by Professor Starrs in its discussion about evidentiary reliability, 509 U.S. at 590 n.9, and about relevance, *Id.* at 591, that article -- as might be expected - pertained to the legal issue before the Court.<sup>26</sup> Neither *Daubert* nor the article by Professor Starrs it cites has anything whatsoever to do with fingerprints or with the methodology underlying fingerprints. Justice Blackmun did not favorably cite Professor Starrs' work as a forensic

---

kidnaping case. Research and writing on “sensational” cases is more than a passing interest for Professor Starrs. Besides his articles on Meriweather Lewis and the Lindbergh case, he also has written articles or papers, given presentations, or directed projects on cases, including the Lizzie Borden case and the deaths of Jesse James, John Wilkes Booth, and Huey Long, Jr.

<sup>26</sup>The name of the article in question is Starrs, *Frye v. United States Restructured and Revitalized: A Proposal to Amend Federal Evidence Rule 702*, 26 *Jurimetrics J.* 249, 258 (1986). It is but one of a legion of articles on the *Frye* standard cited by the Court in the *Daubert* decision. See *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 585 n.3, 586 n.4, 587 n.5 (1993).

scientist or his work in the fingerprint arena. Rather, Justice Blackmun's citations to Professor Starrs' law review article reflect an appreciation of his ability to turn a colorful phrase about a legal -- as opposed to a scientific -- issue. As a law professor, Starrs is able to express his opinions in print, but this does not give him license to testify to opinions about the science of fingerprint analysis as an expert witness.<sup>27</sup>

Professor Starrs is neither a scientist nor a forensic scientist.

3. Professor Starrs' Textbook Discussion of Fingerprints.

Professor Starrs' purported expertise in the area of fingerprint analysis is not advanced by his co-authorship of a textbook entitled Scientific Evidence in Civil and Criminal Cases (hereinafter Scientific Evidence), and, more specifically, a chapter on fingerprint evidence in the most recent edition of that text. In considering whether Professor Starrs' co-authorship of this textbook demonstrates his claimed expertise in the field of fingerprint identification, the authors' own statement about the scope and purpose of the text -- a primer on forensic evidence written by and for lawyers -- is revealing:

This book was written to assist trial lawyers in obtaining a concise understanding of the scope of the most commonly encountered types of expert testimony and the nature of the results which may be expected from the specialists .... Although Scientific Evidence is not a technical treatise for the specialist in any given area, it does give the expert an overview of the legal status in that expert's specialty ....

---

<sup>27</sup>Professor Starrs, it would seem, is an all purpose expert. The law professor previously has ventured his "expert" views on DNA profiling in one case in West Virginia, and in another -- the Maryland case involving the effort to verify the remains of John Wilkes Booth -- he testified about both ground penetrating radar and photographic superimposition. See *Kline v. Green Mount Cemetery*, 677 A.2d 623, 632-633 (Md. App. 1996). In *United States v. Moore, supra*, Starrs held himself out as a firearms and toolmark examination expert. Government counsel understands that Starrs was rejected as an expert by the court in *Moore*. Now he wants this Court to help him try to add fingerprints as another purported expertise.

Moenssens' Scientific Evidence at iii-iv. Thus the authors of Moenssens' Scientific Evidence -- Professor Starrs being one of them -- specifically cautioned their readers not to consider the book a "technical treatise."

Given this disclaimer, and given, as we have shown, the complete absence of any formal education, training, and experience of Starrs in the field of fingerprints, we are left only with the argument of Professor Starrs -- as set forth in the textbook -- "In light of ... *Daubert*, ... generally accepted techniques like fingerprint identification are now vulnerable to challenge." Moenssens' Scientific Evidence § 8.09 at 519. His posture in this litigation makes this a self-fulfilling prophecy.

In sum, James Starrs lacks sufficient education, training, and experience in the field of fingerprints to allow him to qualify as or testify as an expert under *Daubert* and *Kumho*.

## VI. CONCLUSION

Notwithstanding the instant attack, the government respectfully suggests that the science of fingerprints is alive and well and so it should remain. To paraphrase Benjamin Franklin, "[I]n this world nothing is certain but [fingerprints] death and taxes." Letter to Monsieur Leroy, 1789, reprinted in Bartlett's Familiar Quotations (Passages, Phrases and Proverbs Traced to Their Source), 1901 ed.

WHEREFORE, considering all of the foregoing and the evidence to be elicited at the *Daubert* hearing, the government respectfully requests that the Court 1) take judicial notice of the facts that fingerprints (friction ridge formations) are unique to individuals and are permanent, 2) exclude Professor James E. Starrs at trial and 3) admit the testimony of the government's fingerprint experts at trial.

Respectfully submitted,

MICHAEL R. STILES  
United States Attorney

/s/ Ronald H. Levine  
RONALD H. LEVINE  
Assistant United States Attorney  
Chief, Criminal Division

/s/ Paul A. Sarmousakis  
PAUL A. SARMOUSAKIS  
Assistant United States Attorney

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the Government's Combined Report to the Court and Motions In Limine Concerning Fingerprint Evidence have been served upon the following counsel on the date set forth below:

Leigh M. Skipper, Esquire  
Defender Association of Philadelphia  
Federal Court Division  
Suite 800 - Lafayette Building  
437 Chestnut Street  
Philadelphia, PA 19106-2414

/s/ Paul A. Sarmousakis

PAUL A. SARMOUSAKIS  
Assistant United States Attorney

DATE: September 13, 1999