

# Fingerprint Identification: Objective Science or Subjective Opinion?

By WILLIAM F. LEO, B.S., C.L.P.E.  
Los Angeles Sheriff's Department  
Scientific Services Bureau -- Latent Print Section

In *People v. Jennings*, the landmark 1911 case accepting fingerprint evidence in United States courts, Chief Justice Carter stated as part of his opinion that “— there is a scientific basis for the system of fingerprint identification and that the courts are justified in admitting this class of evidence.<sup>1</sup>” By 1999 the standards for acceptance of scientific evidence had changed. A hearing to challenge scientific evidence in the Federal Court System and in many state courts is now referred to as a Daubert Hearing. The first Daubert hearing challenging fingerprint identification occurred in *U.S. v. Byron Mitchell*,<sup>2</sup> an armored car robbery trial. One of the arguments used to attack the fingerprint identification was the allegation that fingerprint identification is subjective.

Another portion of the argument was the lack of an objective standard for identifications, therefore conclusions reached by the latent print examiner are merely subjective opinions that lack scientific reliability. These arguments have become the common thread during Daubert hearings and other attacks on friction skin identification.

The main argument is basically, if fingerprint identification is subjective, it is not science. So what exactly do the words subjective and objective mean?

**Webster's New World Dictionary**, College Edition provides the following definitions:

**SUBJECTIVE:** 1. Affected by, or produced by the mind or a particular state of mind; resulting from the feelings or temperament of the subject, or person thinking, rather than the attributes of the object thought of: as, a subjective judgement. 2. Determined by and emphasizing the ideas, thoughts, feelings, etc. of the artist, writer, or speaker. 3. In *grammar*, nominative. 4. In *philosophy*, having to do with any of the elements in apprehension or a perception derived from the limitations of the mind rather than from reality independent of mind. 5. In *medicine*, designating or of a symptom or condition perceptible only to the patient. 6. In *psychology*, a) existing or originating within the observer's mind and, hence, incapable of being checked externally or verified by other persons. b) introspective.

**OBJECTIVE:** 1. Of or having to do with a material object. 2. Having actual existence or reality. 3. a. Uninfluenced by emotions or personal prejudices: *an objective critic*. b. Based on observable phenomena; presented factually: *an objective appraisal*. 4.

*Medicine*. Indicating a symptom or condition perceived as a sign of disease by someone other than the person affected. **OBJECTIVE n.** 1. Something that actually exists.

**Cambridge Online Dictionary** simplifies the definitions:

**SUBJECTIVE:** Influenced by or based on personal belief or feelings, rather than based on facts.

**OBJECTIVE:** Not influenced by personal beliefs or feelings; based on real facts. It's an admirably objective and impartial report. Science is usually concerned only with objective facts that can be proved or disproved. Objectively: Judges are supposed to weigh the evidence in each case logically and objectively.

The results of a fingerprint comparison are far more than just the subjective opinion of the examiner. In the legal arena, expert witness testimony is presented as opinion testimony, not because the conclusion is someone's personal opinion, but because it is a conclusion that the lay person is incapable of forming.<sup>3</sup> The conclusion reached by the latent print examiner is an “interpretation or conclusion by trained individuals after conducting an examination employing scientific principles, — that are reproducible.”<sup>4</sup> Regardless of the scientific or technical discipline, the purpose of the expert witness in the legal system is to interpret information and form a conclusion that a jury of lay persons would be incapable of doing. If a person without any training in the area of fingerprint identification would provide an opinion as to an identification, that opinion would be subjective and based on personal feelings, rather than skill, and would sound something like “it looks the same to me.” A fingerprint examiner's conclusion is not based upon a personal opinion, but rather on an evaluation of the detail present using knowledge and skills acquired through training, education, and experience.

Very few forms of scientific evidence could be better described as objective than the identification of a latent print by a skilled examiner. This was noted in the written opinion of the Honorable David Hamilton for the Daubert Hearing in *U.S. v. Havvard*,<sup>5</sup> when Judge Hamilton stated:

“... latent print identification easily satisfies the standards of reliability .... In fact, after going through this analysis, the court believes that latent print identification is the very archetype of reliable expert testimony under those [Daubert] standards.”

Some of the Daubert Hearings into fingerprint identification are the result of fingerprint examiners incorrectly stating that the identification process or its results are subjective. One noted fingerprint examiner, David Ashbaugh, states that the conclusion reached by a fingerprint examiner is subjective because it is “based on the knowledge and ability of the examiner.”<sup>6</sup> This is not a correct interpretation of the word subjective, but closely resembles the legal definition of an expert witness. Training, education, and experience are the tangible assets that form the foundation of an examiner's expertise and are not created in the examiner's mind. A fingerprint examiner's knowledge and ability can be and is tested, is documented and can be verified, and is evaluated by the courts and juries every time the examiner takes the witness stand.

A fingerprint identification is the result of a comparison of the unique features present in the two prints being compared. The comparison process is done in a methodical way using the scientific methodology now commonly referred to as ACE/V (Analysis,

Comparison, Evaluation, and Verification). The detail or features present are analyzed. The detail present in the two prints is compared, and an evaluation of that detail takes place to determine if both prints came from the same source. After an identification is made, the process is repeated during the verification process by another examiner.

Something subjective is not based on the attributes of the object being examined, such as the features of a fingerprint, but rather on the feelings of the examiner, and feelings are not verifiable.

One of the cornerstone principles of scientific evidence and its examination is that it is not influenced by the mood, emotions, or the personal prejudices of the examiner. Subjectiveness is based solely on personal feelings.

It has been argued that the only true science is mathematics. Fingerprint identification shares many things in common with mathematics. One is that there is only one correct answer to every problem. In fingerprint identification every impression could have come from only one source and therefore there is only one correct conclusion to every comparison. The ability to arrive at the correct conclusion is affected by the quality of the impressions being compared and the skill of the examiner.<sup>7</sup> In mathematics, the ability to come to a correct conclusion is based on the complexity of the problem and the skill of the mathematician. Skill is not subjective.

The argument that there is no objective standard for identifications is also incorrect. This argument is based solely on the fact that some would prefer a preconceived arbitrary numerical standard. This type of standard would not apply to a unique event and therefore would not be founded in science. This type of simpler standard was the norm in the early 1900's. The research into the complex formation of friction skin and over 100 years of empirical knowledge, validation, and testing have allowed us to abandon this simpler way of thinking. A numerical standard reflects a lack of knowledge of the complexity and uniqueness of what is being compared and satisfies only the uninformed.

Currently, there are, in fact, many objective standards in place for friction skin identification. By using the tenet that acknowledges that every area of friction skin is unique and that the dynamics of every comparison is, in itself, unique and is influenced by the quality and quantity of the features present is in itself a standard based on the scientific research into the formation of friction skin. This standard has been acknowledged and accepted by the courts. The fact that latent print examiners avoid probable or possible identifications which lack any scientific foundation is a standard.

Verification is also a standard. The requirement that another examiner independently examine and verify identifications prior to reporting is, in fact, a very high objective standard that has been acknowledged by several courts during Daubert challenges.

As of this writing, there have been eleven Daubert challenges to fingerprint identification and the score is 11 to 0 in favor of the science of fingerprints.

In conclusion, the examination of a “dimpled chad” on a ballot to determine a “voter's intent” is a subjective opinion. The conclusion reached during the methodical

comparison of two fingerprint images by a skilled latent print examiner to determine if they were made by the same source is objective science.

Footnotes:

1. United States Department of Justice, Fingerprints, (Washington, D.C.: United States Government Printing Office, 1934) pg 22. [Referring to *People vs. Jennings*, 252 Ill., 534; and 96 Northeastern Reporter, 1077.]
2. *United States v. Byron Mitchell*, Criminal Case No. 96--00407, United States District Court for the Eastern District of Pennsylvania, 1999.
3. Jones, Tom, "Opinion vs. Conclusion," The Print, 14(1) January/February 1998, p 9. [Available online at [www.scafo.org](http://www.scafo.org) ]
4. Plumtree, Wayne, "Expert Opinion – Fact or Fiction? Responsibilities of the Expert Witness," The Print, 10(2), February 1994, pp 3--6. [Available online at [www.scafo.org](http://www.scafo.org) ]
5. *United States v. Wade Havvard*, Criminal Case No. IP 00--43--CR--01 H/F, October 5, 2000, United States District Court, Southern District of Indiana. [Available online [www.scafo.org](http://www.scafo.org)]
6. Ashbaugh, David, Quantitative--Qualitative Friction Ridge Analysis (Boca Raton, Florida: CRC Press, 1999) pg 146.
7. Vanderkolk, John R., "Forensic Individualization of Images Using Quality and Quantity of Information," Journal of Forensic Identification, vol 49 #3 (1999): pp 246--256.

*(Editor — Once again, past president and author of several significant articles, Bill Leo explains relevant terminology which is commonly misused or mis-stated in our profession. Another superb explanation of important terminology "Distortion vs. Dissimilarities" can be found on the SCAFO website at [www.scafo.org/library/150201.html](http://www.scafo.org/library/150201.html))*

***This article was printed in "THE PRINT"  
Volume 17 (1) January / February 2001, pp 1 - 3  
and has been obtained from the online library provided by the  
Southern California Association of Fingerprint Officers  
[www.scafo.org](http://www.scafo.org)***