

# **Defending Against the Critic's Curse**

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an original article for CLPEX.com

September, 2002

## **The Critics. INTRODUCTION CLPEX**

Kasey Wertheim and a few others have asked if I would put into writing some of the issues I discussed during my presentation at the ABFDE (American Board of Forensic Document Examiners) entitled "Defense Against the Dark Arts: Defending Against the Critic's Curse". I have agreed to do so and will attempt to address the three most vocal critics: Dr. Simon Cole, Professor James Starrs, and Dr. David Stoney. The purpose of these writings, as was the purpose of the original presentation, was not an attack on these three individuals, but rather an objective (as possible) examination of who these individuals are, what are their major arguments and tactics, and then most importantly how to defend against their attacks and where to obtain the information to support your defense against their "curses". This is hardly all encompassing, and any additional information that you can provide would be most helpful. Please email any comments that you may have to me at [glenn.langenburg@state.mn.us](mailto:glenn.langenburg@state.mn.us). Any anonymous comments that you wish to make, please send to Kasey and he will forward them to me without any identifiers. Please be critical if you see an error.

## **Chapter 1, Dr. Simon Cole**

The first of these writings is focused on Dr. Simon Cole. I first had the opportunity to see Dr. Cole present at DePaul University at a Daubert symposium in Chicago, Illinois on April 15, 2002. I will be brief in my assessment of that afternoon: the fingerprint information, as presented by a latent print examiner of some experience, was not presented particularly well, was not articulated well, and did not address current and topical research that support our science and methodology. I don't question that examiner's ability to perform comparisons, nor do I question that examiner's good intentions. However this is a new era for this profession and stagnation cannot be tolerated. A fundamental aspect of this profession is an understanding of the science, the supporting body of knowledge, and the articulation of it. It has been both bane and blessing that the

critics and Daubert challenges have appeared, as it has raised the bar considerably on the depth of knowledge examiners must possess. The counter arguments of the DePaul Symposium, as presented by Dr.'s Cole and Stoney, were presented very well and effectively whipped the attorneys and skeptics present into a frenzy. This was embarrassing to me and other latent print examiners and forensic document examiners that attended the symposium. This became the driving impetus behind my understanding of the critics. How should I properly prepare against them and what to have ready should they come to the "Land of 10,000 Lakes (and Jesse Ventura)" to present or testify.

This entire article regarding Dr. Simon Cole can be summarized very quickly: read a transcript of Cole's testimony from *The People of the State of New York vs. James Hyatt* (Frye hearing, Ind. No. 8852/00, NY 2001). In this hearing, the prosecutor, Caryn Stepner, does a fantastic job of analyzing and attacking Cole's statements. In her cross-examination, she revisited criticisms that Justice Joyner raised during *U.S. v. Byron Mitchell*, regarding the lack of data or research Cole did to support his theories. A good example is at the end of a grueling cross-examination, Cole states, with respect to his theories, "My theory does not purport to be science. I haven't tested it. Through experiment, it purports to be scholarship...it's not a scientific theory, it's an opinion based on scholarly research." Every prosecutor that will question Cole as a hired defense witness will want a copy of *Hyatt*. A .pdf copy can be found at [www.onin.com](http://www.onin.com).

## II. BACKGROUND

Dr. Simon Cole has a Baccalaureate of Arts (BA) degree from Princeton University in History. He earned a Doctorate of Philosophy (PhD) from Cornell University in Science and Technology Studies. This is a history and sociology degree. Do not be fooled by the title "Science and Technology". This program focuses on the history of science and technology and the social implications of such (1).

Dr. Cole is a historian. He is not a scientist. Even he will readily admit: "I view myself primarily as a sociologist and historian of science and technology" (2).

His unpublished thesis studied the history of fingerprint science and technology, and the impact on society and jurisprudence (3). This thesis material was the basis, as well as additional methods of identification, for his published book "Suspect Identities—A History of Fingerprinting and Criminal Identification" (4).

How many scientists does it take to make a consensus? Supporting our science are numerous scientists, both of academic and forensic background: Dr.

**Babblers, Prof. Moenssens, Donald Ziesig, Dr. Bruce Budowle, etc. Furthermore the wealth of statistical studies and biometric application research is more often than not initiated by the academic and private industry sectors. Clearly Simon Cole does not have his finger on the proverbial pulse of academia and the scientific community. Just because he cannot walk onto a generic University campus and find a scientist familiar with fingerprint science does not invalidate the science. I would argue that I had not heard of “Science and Technology Studies” prior to his appearance on the scene and not all universities have such a program. Does that invalidate his degree?**

**Dr. Cole’s main attacks are as follows:**

- 1) “[Fingerprinting/Fingerprint identification] does not meet a reasonable definition of being a scientific field or scientific conclusion” (5)**
- 2) Reliability of examiners is unknown and potentially quite low (6)**
- 3) Historical/anecdotal attack and support for his arguments**
- 4) Examiners maintain a “united front” by not openly disagreeing with one another (7)**

**Each attack is discussed below, accompanied by a possible defense. I will not go into detail on our stance on each of these issues. I will leave that to the issues of the “Daubert card” as proposed by Scarborough and York.**

### **III. ISSUE 1**

**“[Fingerprinting/Fingerprint identification] does not meet a reasonable definition of being a scientific field or scientific conclusion”**

**Attack:**

**This issue has been raised by Cole because “pure”/“real” scientists don’t accept fingerprint science as true science (8). “Real” scientists such as Prof. Starrs and Dr. Stoney and legal scholars such as Michael Saks and David Faigman agree, so there’s his proof. And the primary research and studies done in our field are within our field, and not addressed by academic and research scientists (at a University for example). Lastly he also says that it is not scientific because of the falsifiability principle (9). Because one cannot prove an examiner wrong, that is not scientific, nor**

based on scientific method.

Defense:

#### IV. ISSUE 2

**Reliability of examiners is unknown and potentially quite low**

Attack:

A favorite of Cole's is to address the 1995 Collaborative Testing Services (CTS) exams (10). He will then often segue into anecdotes of famous erroneous identifications (*Caldwell, McKie, etc.*).

Defense:

CTS tests are not controlled experiments, nor do they reflect actual casework. When Dr. Cole reports an error rate from a CTS exam, he should be promptly asked were the errors: erroneous identifications, clerical errors, or misses? How many actual trained examiners took the exam? He will not know. Neither do we. He will also bring up the fact that blind proficiency testing is not done routinely in our field. Some departments do this and have it well documented. Some departments don't. In my opinion they should. This type of proficiency testing does imitate real case work and can be done in conjunction with CTS testing by those labs which must take CTS exams as per the American Society of Crime Laboratory Directors (ASCLD) requirements.

#### V. ISSUE 3

**Historical/anecdotal attack**

Attack:

As a historian, and friend of Professor Starrs, Dr. Cole has excellent access to historical records, transcripts, and other resources. A very common theme in his attack is to make a statement and then support it with an anecdote or two. What he does not do is make a statement and then support it with: "...and to support that statement, the data from this research that I conducted is as follows..."

**Defense:**

**The best thing here is to know what's coming. He is likely to reference any of the following historical cases:**

*People vs. Jennings* (96 N.E. 1077, Illinois, 1910)

*People vs. Crispi* (New York, 1911)

***U.S. v. Parks* (CR-91-358-JSL) (A very important case we should all know about; though pre-Daubert the fingerprint evidence was ruled not admissible on very Daubert-like reliability issues)**

*State v. Caldwell* (322 N.W. 2d 574, Minnesota, 1982)

*David Abury/Shirlie McKie* case of Scotland, U.K.

**With respect to his theories and his statements, he simply has not conducted any statistical research to back up his claims; it has been scholarly research thus far. This was a most effective tactic used throughout *Hyatt* and clearly recognized by Justice Michael Brennan in his decision (11).**

## **VI. ISSUE 4**

**Examiners maintain a “united front” by not openly disagreeing with one another.**

**Attack:**

**Early criminalists (Kuhne, Gribben, et. al.)—from writings over 80 years ago—wrote that latent print examiners must achieve a similar opinion when examining prints (12). This created an atmosphere of infallibility and any deviation from the norm was an examiner’s error and that examiner would be sacrificed for the good of the profession. Furthermore, disagreements between examiners’ opinions are settled “behind closed doors” rather than publicly aired (i.e. in court) (13).**

**Defense:**

This is a very unfair painting of the scientific process through which we form our conclusions. Consistency is not only expected, it is demanded by our methodology. Of course examiners will all agree, if they are adhering to the methodology: it either matches, doesn't match, or one cannot tell either way. Rarely is the problem, other than the McKie case, that examiners maintain their opinion of an erroneous identification.

More commonly, one examiner will effect an identification and another examiner will not have observed sufficient reliable detail in agreement to also effect that identification. The second examiner does not think the prints don't match, he or she is just not sure they do match to the exclusion of all other sources. What is particularly lacking in Cole's assessment of this, is affording examiners the luxury of any other scientific process—the opportunity to reassess one's conclusions. If an examiner points out detail that I did not observe or can show me further evidence to convince me of their conclusions, how is this any different than any other scientific process? If I change my opinion based on new evidence (i.e. ridge detail) I failed to notice before, is this the result of a conspiratorial clandestine caucus? I submit that in fact, this is SCIENTIFIC METHOD at work.

Lastly, the most obvious defense here is that it has been the examiners of talent and courage that spot the erroneous identifications that have occurred (14). These examiners have not maintained any sort of "Code of Silence" with the phantom risk of ostracizing themselves and exposing fallibility in this profession.

## CHAPTER 1 SOURCES

- (1) An example of actual courses offered in S&T studies at Cornell include: Visualization and Discourse in Science; Enlightened Science; The Sociology of Science; Topics in the History of Women in Science; Biotechnology and Law; Law, Science and Public Values, etc.
- (2) *The People of the State of New York vs. James Hyatt*, Ind. No. 8852-00, Frye Hearing, NY 2001, p. 11.
- (3) *Ibid.* p. 5-6.
- (4) Cole, Simon. Suspect Identities. 2001.
- (5) *Hyatt*, p.11, 18.
- (6) *Hyatt*, p.12-18.
- (7) *U.S. v. Byron Mitchell*, No. 96-407, PA 1999, Day 5 of Daubert hearing, p. 9-13.
- (8) *Hyatt*, p.18, 23.
- (9) *Mitchell*, p.21.
- (10) *Hyatt*, p.12-18 and DePaul University Daubert Symposium notes, Chicago, IL, April 15, 2002.
- (11) *Hyatt*, Decision; Conclusions of Law, p. 3.
- (12) Cole, Simon. "Latent Fingerprinting Evidence and Expert Knowledge", Fingerprint World, Vol. 28, no. 107,

Jan. 2002, p. 37.

(13) *Ibid.* p. 38.

(14) Wertheim and Grieve (Asbury/McKie case); Hyatt p.20-21.

## **Chapter 2, Professor James Starrs**

The second of these writings is focused on Professor James Starrs. I have not had the opportunity to see Prof. Starrs present - yet. I have copies of his presentations, transcripts, and read many of his voluminous articles, reviews, and text chapters. In fact my first introduction to Prof. Starrs was in my undergraduate forensic science program at Michigan State University. Required reading for the course was Saferstein's Forensic Science Handbooks (Vol. 1 and 2-there were only 2 volumes back then!). In the FSH Vol. 2, the first chapter is written by Starrs and is titled: "Mountebanks among Forensic Scientists"(1). In the chapter he described two types of shady forensic expert witnesses: the academites and the careerists. The academites either outright lie or exaggerate their education credentials. No one could claim that Starrs is an academite mountebank. His education and pedigree are impressive to say the least. He is a tremendously prolific writer, superb legal researcher and historian, and possesses brilliant insight and ideas. But the second type of shady witness, the careerist, is the "expert" that bolsters their stature as an expert witness with a façade of lies or exaggeration regarding their qualifications. I would like to return to this type of "expert" later.

There are several transcripts available for cases in which Starrs has testified or attempted to testify. U.S. v. Byron Mitchell, Arizona v. Toribio Rodriguez, and Pennsylvania v. Andrew Vikara III are related to fingerprints (2-4). U.S. v. Corey Moore is a firearms/toolmark case involving the exclusion of bunter mark evidence (the manufacturer's stamping impression made by a tool onto a cartridge) (5). All of these cases have offered excellent insight into the type of testimony Starrs provides and his knowledge, or lack thereof, regarding a particular forensic discipline. I would recommend getting copies of these as strong resources for defending against Starrs.

## **II. BACKGROUND**

Professor Starrs has an impressive background. He first attended Niagara University, NY (6). He very honorably postponed his studies to serve in the Army during the Korean War and resumed his studies at St. John's University, NY to receive a Bachelor of Arts (BA) in English and a Bachelor of Laws (LL.B.) (7). Starrs then earned a Master of Laws (LL.M) from New York University, NY. He was enrolled in, but did not complete, a PhD program at NYU as well (8).

He has taught law and forensic sciences at George Washington University, D.C. for over 30 years, and was one of the co-founders of the Department of Forensic Science (9). He has written several chapters in books, including "Scientific Evidence in Civil and Criminal Cases" (10). Starrs is a distinguished fellow of the American Academy of Forensic Science (AAFS) and sits on the editing board of the Journal of Forensic Science (11). He has penned scores of articles and reviews on a wide range of forensic topics and legal issues. He supervised the investigations of several high profile cases, including the Sacco and Vanzetti case and the identity authentication of the corpse of Jesse James (12). His curriculum vita is over 20 pages long (13). As noted by one judge, "With a pedigree like that [Starrs] is getting in the door-he may not get to testify in the trial, but he's coming in for the [evidentiary] hearing" (italics added) (14).

Professor Starrs tends to raise similar issues that Simon Cole raises ("falsifiability", error rates and the proficiency testing exams, subjectivity of the identification process, etc.). Rather than rehash these issues again, I will examine three telling issues about Starrs' qualifications as an expert in forensic science and fingerprint methodology.

- 1) Professor Starrs is a forensic scientist
- 2) Starrs possesses expert knowledge of various forensic sciences and methodologies, including fingerprints
- 3) Misstatements, incorrect facts, and general ignorance of fingerprint science

These three issues are discussed below, accompanied by a possible defense.

### III. ISSUE 1

Professor Starrs is a forensic scientist and possesses expert knowledge of various forensic sciences and methodologies, including fingerprints

#### Attack:

Before proceeding to testify as an expert witness, Starrs must qualify as an expert witness. With his impressive credentials and long list of accomplishments, he tends to be very convincing that he is an expert and a forensic scientist.

#### Defense:

This is simply not true and prosecutors have been very keen to address this issue. Starrs is an instructor of forensic science and an author of forensic science related writings. Teaching forensic science and law does not make him a forensic scientist. Even initially when he and four others were founding the Forensic Science program at GWU, Starrs was brought aboard to represent the law school (15). Furthermore, as a distinguished member of AAFS and the JFS editorial board, he

represents the jurisprudence (legal issues) division (16).

Starrs completed a few undergraduate science courses approximately fifty years ago (17). Other than that, he has no formal scientific training. He has never worked in a forensic laboratory. He does not attend crime scenes (18). He has not taken any formal instructional course in fingerprints (19). His background is English and Law. No matter how he attempts to colorfully paint his background, his understanding of forensic science is limited only to academic understanding without the training, education, or experience to support his claim. Starrs does not perform any scientific examinations, nor is he qualified to. He has published no scientific, controlled research studies. He has coordinated forensic investigations (Sacco and Vanzetti, e.g.) and forensic exhumations (Jesse James, e.g.), but any scientific examinations in these cases were performed by actual forensic scientists, who submitted their reports and findings to Starrs for collation and integration into the legal and historical research performed by Starrs (20, 21).

#### **IV. ISSUE 2**

**Starrs possesses expert knowledge of various forensic sciences and methodologies, including fingerprints**

##### **Attack:**

Starrs has written half a dozen articles regarding fingerprints (22). He has researched and read many writings regarding fingerprint issues. He has worked "in the trenches" and "shoulder to shoulder" with fingerprint experts and gleaned a great deal about the methods examiners use (23). Therefore he is a qualified expert in fingerprint "issues" and methodologies. (Note: he has made the same arguments for his expertise of DNA and firearms/toolmarks examinations) (24).

##### **Defense:**

This is nonsense. In U.S. v. Corey Moore, the A.U.S.A.'s (Asst. U.S. Attorneys) state it very well:

"If accepted, this claim to expertise based on Professor Starrs' association with experts would mean that any intelligent lawyer who works "shoulder to shoulder" with experts subsequently will be qualified to testify in their stead. The absurdity of this proposition speaks for itself." (25)

No amount of book learning, writing, or instructing can replace actual experience and understanding from actually practicing a method. He may understand the general premises, and clearly he understands the historical and legal aspects of fingerprints, but to claim to understand the methodology-without ever having performed it-is beyond any reasonable claim and certainly borders on his own accusations of other experts and so-called "careerists" (26).

## **V. ISSUE 3**

### **Misstatements, incorrect facts, and general ignorance of fingerprint science**

#### **Attack:**

**Starrs, through his readings, research, conversations with preeminent fingerprint experts, etc. can give detailed testimony about the workings and methodologies of the fingerprint discipline.**

#### **Defense:**

**Though this author has great respect for Starrs' works, insights, eccentric humor, and critical-ever-watchful eye, that admiration is quickly diminished when one reads his testimony and he lays bare his very shallow understanding of our discipline. The best defense for this are the trial transcripts from The State of Arizona vs. Toribio Rodriguez. I counted over 23 incorrect, incomplete, or completely untrue statements made by Starrs, without even really nitpicking. I chose ten of the most spurious statements. Please refer to Rodriguez for the complete quote and context. (I will attempt, through Kasey to make these transcripts readily available in the near future in .pdf format.)**

#### **Top 10 Really Unbelievable Statements Made by Starrs in Rodriguez**

**10. "There is no measurement made by individual examiners as to whether or not the bifurcation is wide or narrow. A bifurcation is a bifurcation...it may be an ascending or descending bifurcation [but] no mention is made of that." (27)**

**9. "Flexion creases [in the palm] occur during life, after birth." (28)**

**8. "...with respect to palm prints, we don't always have arches, loops, and whorls. We can say 60 percent of the population will have loops on their fingers. We can't say that with respect to palm prints. We don't have the statistical basis. We don't have the empirical data to make such conclusions, and therefore, it is often said that there are some people that don't have arches, loops, and whorls among the various ridge characteristics on their palms." (29)**

**7. Elimination prints should be taken and compared to a latent print to exclude them as a source of a print, even if an individualization or match was made regarding the source of the print. This prevents a false positive result (erroneous identification). (30)**

**6. Regarding an interview of a DNA scientist for Starrs' exhumation of Jesse James: the DNA scientist wanted to examine the unknown sample first, the known sample second and then compare the two. Starrs said to him, "You are hired because you have proved yourself to be an objective scientist." (He implied throughout his testimony, fingerprint examiners do not do this) (31)**

5. "...I would consider [Automated Palmprint Identification System, A.P.I.S.] not yet accepted, to my knowledge, by the F.B.I., as being experimental in nature. They still haven't been proved out in the real world." (32)

4. "...indeed, I've seen articles concerning fingerprints where fingerprint examiners have actually come to a conclusion as to an identity based exclusively on the existence of unique classifiable arches, loops, and whorls." (33)

3. "...a bifurcation is a very common occurrence, as is an ending ridge is common. There are many uncommon characteristics that are blithely overlooked: the spur, the bridge, the trifurcation..." (34)

2. "I am sure there are other characteristics as well, such as, for example, the pores on the papillary regions themselves or the ridges themselves, are they wide, are they narrow, and does that indicate some distinguishing characteristic. There are numerous other features that can be looked at for the purposes of making an [identification], but rarely are they." (35)

1. "It is a scientific approach to look for dissimilarities and not similarities...That is not the approach typically taken by fingerprint examiners. They look for similarities. That, of course, mean they are missing possible dissimilarities." (36)

What is most shocking about his testimony is that this was from a case last year (2001)! This wasn't 20 years ago as Ashbaugh was penning his ridgeology treatises. Interestingly Prof. Starrs mentioned that he was once contacted by an attorney regarding a fingerprint matter, because as Starrs related, "...if anyone had the finger on the button, I did because I follow the field very closely"(37). It seems very clear from his testimony in Rodriguez, that he is not, as he claimed, "a forensic scientist who is quite knowledgeable in the area of fingerprints (38).

## **CHAPTER 2 SOURCES**

(1) Saferstein, Richard. Forensic Science Handbook, Volume 2, Prentice Hall: New Jersey, p.1-37.

(2) U.S. v. Byron Mitchell, No. 96-407, Philadelphia, PA July 1999, Transcripts of Day 4 of Daubert hearing, p. 122-232.

(3) The State of Arizona v. Toribio Rodriguez, CR-41460, Tucson, AZ, May 2001, Transcripts of James Starrs.

(4) Pennsylvania v. Andrew Vikara III, 2000 Criminal 2264, Lackawanna Co., PA, Frye hearing, Oct. 2001.

(5) U.S. v. Corey Moore, Cr. No. F-10928-94, Dist.Columbia, Starrs' Declaration (Feb. 1997) and Government's Response (Mar. 1997)

(6) Mitchell (c.f.), p. 129.

(7) Ibid. p.129.

(8) Ibid. p.130,Rodriguez (c.f.), p. 49.

(9) Rodriguez (c.f.), p. 14.

(10) Moenssens, Starrs, Henderson, Inbau. Scientific Evidence in Civil and Criminal Cases, 4th ed.; Foundation Press: New York.

- (11) Mitchell (c.f.), p. 133.
- (12) Starrs, J.E. Once More Unto the Breech: The Firearms Evidence in the Sacco and Vanzetti Case Revisited: Parts I and II. JFS 1986, 31(2 and 3), 630-654 Pt. I, 1050-1078 Pt. II.
- (13) U.S. v. Corey Moore, Government's Response, Exhibit E.
- (14) American Board of Forensic Document Examiners Daubert Symposium, Las Vegas, NV, June 2002; personal notes.
- (15) Rodriguez (c.f.), p. 22-23.
- (16) American Academy of Forensic Sciences, Journal of Forensic Science Editorial Board, Members listing
- (17) Rodriguez (c.f.), p. 67.
- (18) Rodriguez (c.f.), p. 107.
- (19) Rodriguez (c.f.), p. 104-106.
- (20) Starrs, J.E. Once More Unto the Breech: The Firearms Evidence in the Sacco and Vanzetti Case Revisited: Parts I and II. JFS 1986, 31(2 and 3), 630-654 Pt. I, 1050-1078 Pt. II.
- (21) Starrs, J.E, Stone, A.C., Stoneking, M. Mitochondrial DNA Analysis of the Presumptive Remains of Jesse James. JFS 2001, 46 (1), 173-176.
- (22) Mitchell (c.f.), p. 126. e.g. "More Saltimbancos on the Loose?..." Sci. Sleuthing Newsl.(1988); "A Miscue in Fingerprint Identification: Causes and Concerns" J.Pol.Sci. & Admin. (1984); "To Err is Human, Infallibility is Divine" Sci. Sleuthing Newsl. (1983).
- (23) "in the trenches" Starrs. Presentation "The Canards of Fingerprinting" American Academy of Forensic Sciences Annual Conference, Feb. 2002. "shoulder to shoulder" U.S. v. Corey Moore, Starrs' Declaration, p. 7, Mitchell (c.f.), p. 131.
- (24) Firearms/toolmarks, bunter marks: U.S. v. Corey Moore, Cr. No. F-10928-94, Dist.Columbia, Starrs' Declaration (Feb. 1997); DNA: State v. Woodall, 182 W.Va. 15, 385 S.E.2d 253 (1989).
- (25) U.S. v. Corey Moore, Government's Response, p. 30.
- (26) Starrs, J.E. Recent Developments in Federal and State Rules Pertaining to Medical and Scientific Expert Testimony. Duq. L. Rev., (34) 813 1996.
- (27) The State of Arizona v. Toribio Rodriguez, CR-41460, Tucson, AZ, May 2001, Transcripts of James Starrs, p. 72.
- (28) Ibid. p. 61.
- (29) Ibid. p. 63.
- (30) Ibid. p. 89.
- (31) Ibid. p. 69.
- (32) Ibid. p. 64.
- (33) Ibid. p. 63.
- (34) Ibid. p. 72.
- (35) Ibid. p. 82.
- (36) Ibid. p. 70.
- (37) Ibid. p. 36.
- (38) Ibid. p. 18.

### **Chapter 3, Dr. David Stoney**

The third of these writings is focused on Dr. David Stoney. I first had the opportunity to see Dr. Stoney present at DePaul University at a Daubert symposium in Chicago, Illinois on April 15, 2002, along with Simon Cole (see "DEFENDING AGAINST THE CRITIC'S CURSE": CHAPTER 1, DR. SIMON COLE). I was most impressed with Dr. Stoney and his insightful, though critical, views on the science of friction ridge skin identifications. He raised valid issues and concerns which many in this profession agree need to be addressed. I personally found Stoney to be distinctly different from Starrs and Cole, not only in his

background, but also in his tactics, concerns, and opinions of friction ridge skin identifications.

Unlike the previous two “expert” critics, Stoney is an entirely different beast, and there is no simple defense. He does not testify as an expert critic as often as Starrs and Cole do. There are no terribly grievous errors in his testimony. He has valid, professional criticisms against this discipline and understands the foundation and methodology. He has contributed research and material towards the advancement of this profession. The best defense against Dr. Stoney is a firm education in science and the fundamentals of friction ridge skin sciences and methodology AND the ability to articulate them. Know your science, as most assuredly, he does.

## **II. BACKGROUND**

Dr. Stoney earned a Bachelor of Science (BS) in chemistry and criminalistics from the University of California, Berkeley—a program established by the late great Paul Kirk. From this same institution, Stoney earned a Master of Science in Public Health and a doctorate (Ph.D.) in forensic science (1). His thesis work was based on quantitative statistical fingerprint modeling, resulting in various publications in texts and journals (2). Dr. Stoney worked at the Institute of Forensic Sciences Criminalistic Laboratories in Oakland, California (an independent crime lab) (3). While there, he performed various forensic examinations, including latent print comparisons (4). Afterwards he served as an associate professor and director of the Forensic Science Program at the University of Illinois, Chicago (5). Dr. Stoney is currently the director of the McCrone Research Institute in Chicago, Illinois and has served in this capacity since 1993 (6). Stoney has published approximately two dozen articles on various aspects of forensic science, including fingerprints (7).

Unlike Cole and Starrs (see previous Chapters 1 and 2), Stoney is a forensic scientist, with the education, training, and experience to support that claim. He also has limited (academically derived and apprenticeship under John Thornton, previously of the Contra Costa County Criminalistic Laboratory) training in the analysis, comparison, and evaluation of latent prints (8). However, he has not had intensive, formalized (modular or otherwise) training in the identification of latent prints. Furthermore, the number of comparisons he claims to have performed is less than 1000 (9).

Dr. Stoney’s main attacks are as follows:

- 1) ACE-V methodology has elements of subjectivity and the evaluation is ultimately not scientific
- 2) No objective criteria or measurements to measure individuality

- 3) Reliability of examiners practicing the ACE-V method has not been sufficiently tested
- 4) Error rate is meaningless without a standardized objective method of measurement
- 5) Ultimately, fingerprint identification works and it's good evidence, but it isn't science and it doesn't meet Daubert requirements

### III. ISSUE 1

**ACE-V methodology has elements of subjectivity and the evaluation is ultimately not scientific.**

#### **Attack:**

**The result of ACE methodology is a subjective opinion. A subjective opinion based on subjective standards is not scientific (10)**

#### **Defense:**

**This is a difficult statement to defend against because there are elements of truth to it, allowing for various interpretations. While it is true that ultimately whether a print matches or does not match is a subjective conclusion, it is not necessarily true that the steps to arrive there are completely devoid of any objective criteria. Steve Meagher, a Unit Chief for the Latent Print Division of the FBI, stated quite succinctly that in fact our criteria for an identification is very exact: complete agreement of all ridge detail present between known and unknown with no unexplainable differences (11). Furthermore, Pat Wertheim has drawn excellent analogies to the process of latent print comparison using scientific method (e.g. observation, hypothesis, testing, conclusion, and reliable predictability) to demonstrate the stages of analysis, comparison, and evaluation (12).**

**It can also be argued that many aspects of science incorporate subjective decisions, criteria, and conclusions. Taxonomy is an excellent example. The classification and identification of species based on various quantitative and qualitative criteria is a very similar process. In pathology and toxicology, there are many subjective interpretations a scientist must make. Is this product causing class 2 or**

class 3 edema and rash on this rabbit's skin? Are these red blood cells deformed? Is a correlation factor of 0.65 a strong or a weak indicator of a causal relationship? To say that subjectivity has no place in science is not consistent with all the myriad aspects of science. And contrary to some critics' opinions, there is no consensus and standard definition among all the various sciences regarding exactly what defines "science" (13,14).

Personally, when I listen to this debate, there appear to be two steadfast camps: Stoney calling for entirely objective standardized measurements and the pure ridgeologists that say what we currently do is acceptable and scientific. I personally feel, as a scientist, that the answer lies somewhere in the middle. This profession would perhaps benefit greatly by further defining various objective criteria and attempting to incorporate standardized measurement into the identification process. Research is desperately needed here! What are the frequencies of spurs, short ridges, dots, trifurcations and the like? What would those frequencies tell us about weighing the various minutiae? With what frequency do open fields (continuous ridge series with no minutiae) occur? How can one calculate tolerance ranges for various types of distortions? When we say total agreement between known and unknown, what does that mean? Are there ways to measure all three levels of detail, using similar technology that the U.S. Postal Service uses for the analysis of handwriting, and formulate an actual correlation value between a known and unknown (16)? Would the inclusion of these types of measurements increase the uniformity of examiner conclusions? These are all valid questions of our profession and we owe it to ourselves to at least examine their potential.

#### IV. ISSUE 2

No objective criteria or measurements to measure individuality.

##### Attack:

How much correspondence between known and unknown prints is sufficient to conclude that they originated from the same unique source? In other words, how much is enough? Currently fingerprint examiners do not and cannot (17):

- objectively quantify and measure the amount of detail in a fingerprint (including all three levels)
- measure the correspondence of the detail between known

**and unknown**

- **objectively interpret the meaning of a given correspondence between known and unknown (i.e. what does total agreement between two prints mean?)**

**Defense:**

**These issues are in the same vein as Issue 1 above. This does not mean that what we do is not acceptable and valid or does not work, but more importantly it raises the question: can we do it better and more uniformly? Also it logically follows that if one can measure the correspondence between two prints, then one can also measure the disparity between two prints.**

### **V. ISSUE 3**

**Reliability of examiners practicing the ACE-V method has not been sufficiently tested.**

**Attack:**

**The ACE-V methodology has not been objectively tested through controlled, scientific testing and validation procedures (18). [It is interesting to note that unlike the other critics, Stoney does not attempt to support his argument with the results of various Collaborative Testing Service (CTS) proficiency examinations. Perhaps he recognizes that these CTS exams are not scientific controlled studies.]**

**Defense:**

**Unfortunately, I cannot agree more with Stoney. When compared to the types of validation studies that exist for analytical methods and analysis (e.g. EPA, FDA, GLP, ISO standards for validating methods) ACE-V has not been tested in a scientific and controlled environment. This issue is one of concern and interest for me personally, and already several studies are being initiated by myself and others (19). I hope that other scientists will also contribute to this need.**

**It is true that proficiency testing and “training to competency”**

encompass and measure individual performance and application of the methodology, which is an important and necessary factor for qualifying in court. However individual proficiency and competency testing do not represent controlled scientific studies, nor are those data published, reviewed, and available to the latent print examiner community. As one researcher warned, “If it isn’t published, it doesn’t exist (20).”

## VI. ISSUE 4

Error rate is meaningless without a standardized objective method of measurement.

### Attack:

It is meaningless to enter into a discussion concerning error rate until an objective, standardized methodology exists which utilizes objective criteria and measurements.

### Defense:

The standard defense against this line of attack is to differentiate between the error rate of the science (or theoretical error rate) and error rate of the scientist. For purposes of court this is an effective answer. However once again, I find myself agreeing with Stoney.

If an examiner declares an identification, but a second examiner opines that though the prints are in agreement, there is insufficient evidence to support the identification, is there an error? When one is making standardized measurements there is always a degree of uncertainty and an error rate is calculable. Stoney’s statement says just that: you need a standardized objective measurement to calculate an error. If your target keeps moving from print to print (as we would expect based on a continuum of clarity and quantity of ridge detail), then it is impossible to define the target and calculate how often the target is missed (21).

What I feel most comfortable with is: we cannot define an error rate with this current methodology, therefore we cannot calculate one. This is clearly a complex issue and open for further discussion and debate.

## VII. ISSUE 5

**Ultimately, fingerprint identification works and it's good evidence, but it isn't science and it doesn't meet Daubert requirements (22).**

**Attack:**

**This statement nicely summarizes Stoney's perspective. It does not meet the requirements of science and Daubert because of the issues previously discussed. However it works. As he stated, "At some point the quantity and the quality of ridge information is great enough to make an identification. The problem is no one knows at what point that is true and at what point does that becomes reliable"(23).**

**Defense:**

**It is this type of statement that reduces the effectiveness of Stoney as an expert critic, because ultimately he agrees and admits that it does work and can be valuable, crucial evidence. He admits to having made absolute identifications (24). However he points out, and in some ways rightly so, that the profession needs to further scrutinize it's methods, training, and standards and perform valuable research and testing.**

**I firmly disagree with Stoney's statement that friction ridge skin identification is not a science. I believe it is a science, the method is analogous to scientific method, and the resulting conclusions are falsifiable. It can also be argued that the courts disagree with Stoney's statement that it does not meet Daubert guidelines for reliability, because it has met various Daubert and modified Frye challenges, successfully, in over 40 instances (25).**

**CHAPTER 3 SOURCES**

- (1) *U.S. v. Byron Mitchell*, No. 96-407, PA 1999, Days 4 of Daubert hearing, p. 36.**
- (2) Stoney, David; Thornton, John. "A Critical Analysis of Quantitative Fingerprint Individuality Models" and "A Method for the Description of Minutia Pairs in Epidermal Ridge Patterns," *Journal of Forensic Sciences*, 31 (4), Oct. 1986, p. 1187-1216; p.1217-1234; Stoney, David. "Measurement of Fingerprint Individuality," *Advances in Fingerprint Technology*, 2<sup>nd</sup> ed. (Lee and Gaensslen), CRC Press, 2001, p.327-387.**
- (3) *U.S. v. Byron Mitchell*, No. 96-407, PA 1999, Day 4 of Daubert hearing, p. 40.**

- (4) *ibid.*
- (5) *ibid.* p. 39.
- (6) *ibid.* p. 37.
- (7) *ibid.* p. 41.
- (8) *ibid.* p. 58-63.
- (9) *ibid.* p. 62.
- (10) DePaul University Daubert Symposium notes, Chicago, IL, April 15, 2002.
- (11) International Assoc. for Identification 87<sup>th</sup> International Educational Conference, SWGFAST Panel Discussion, personal notes, Las Vegas, NV, August 7, 2002.
- (12) Wertheim, Pat. "Advanced Ridgeology Comparison Techniques" Training Course, Santa Barbara, CA, October 16-20, 2000.
- (13) DePaul University Daubert Symposium notes, Chicago, IL, April 15, 2002.
- (14) Meyer, Carl. Expert Witnessing: Explaining and Understanding Science. CRC Press, 1999.
- (15) Stoney, David. "Measurement of Fingerprint Individuality," Advances in Fingerprint Technology, 2<sup>nd</sup> ed. (Lee and Gaensslen), CRC Press, 2001, p.329-330.
- (16) Srihari S., Cha S., Arora H., Lee S. "Individuality of Handwriting," *Journal of Forensic Sciences*, 2002, 47 (4), p. 1-17.
- (17) Stoney, David. "Measurement of Fingerprint Individuality," Advances in Fingerprint Technology, 2<sup>nd</sup> ed. (Lee and Gaensslen), CRC Press, 2001, p.329-330.
- (18) *ibid.* p. 330 and *U.S. v. Byron Mitchell*, No. 96-407, PA 1999, Day 4 of Daubert hearing, p. 87.
- (19) Langenburg, G. "A Pilot Study Statistical Analysis of the ACE-V Methodology Analysis Stage", unpublished study at the time of this writing, expected date: winter 2002.
- (20) American Board of Forensic Document Examiners Daubert Symposium, Las Vegas, NV, June 2002; personal notes.
- (21) DePaul University Daubert Symposium notes, Chicago, IL, April 15, 2002.
- (22) *ibid.*
- (23) *ibid.*

(24) *U.S. v. Byron Mitchell*, No. 96-407, PA 1999, Day 4 of Daubert hearing, p. 55.

(25) World wide web: [onin.com](http://onin.com), [clpex.com](http://clpex.com)

**This concludes the three part series focusing on the three prominent critics of the friction ridge identification discipline: Dr. Simon Cole (Chapter 1), Professor James Starrs (Chapter 2), and Dr. David Stoney (Chapter 3). Please contact the author if you have further questions, concerns, or criticisms.**

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