

5-1-2005

Expectation and Practical Results in Fingerprinting Technology: Where Is the Line Drawn; Note

Rebecca Parrott Waldren

Follow this and additional works at: <http://scholarship.law.nd.edu/jleg>

Recommended Citation

Waldren, Rebecca Parrott (2005) "Expectation and Practical Results in Fingerprinting Technology: Where Is the Line Drawn; Note," *Journal of Legislation*: Vol. 31: Iss. 2, Article 6.

Available at: <http://scholarship.law.nd.edu/jleg/vol31/iss2/6>

This Note is brought to you for free and open access by the Journal of Legislation at NDLScholarship. It has been accepted for inclusion in Journal of Legislation by an authorized administrator of NDLScholarship. For more information, please contact lawdr@nd.edu.

EXPECTATIONS AND PRACTICAL RESULTS IN FINGERPRINTING TECHNOLOGY: WHERE IS THE LINE DRAWN?

*Rebecca Parrott Waldren**

I. INTRODUCTION: TECHNOLOGY REVOLUTIONIZES THE CRIMINAL JUSTICE SYSTEM

Continued technological advances create and shape a world that was unimaginable to our ancestors. To the twenty-first century inhabitant, life centers around technology as it affects and encompasses every aspect of normal days. One area that has greatly evolved and changed with technological developments is the criminal justice system. Since “forensic science . . . has been an invaluable tool for the criminal justice system for over a century,”¹ the technological advances in this field necessarily evoke changes within the courtroom. Today, lawyers utilize both science and technology to offer and present evidence which mere decades ago could neither be collected nor extracted. Through mass media coverage of new technology, jurors hold high expectations that the prosecution will employ the latest technology to extract evidence as proof of guilt for the accused.² Currently, judges must evaluate these new technological developments in order to determine its admissibility in their courtrooms. Therefore, it is ultimately the judge’s decision on the admissibility of evidence obtained through these new technological measures that will most affect all of the courtroom players.

There is some guidance offered on the admissibility of such evidence through congressional and state legislation. However, much of this legislation and regulation is insufficient. It seems that even the legislatures, both federal and state, take advances in technology for granted. This is a failing on their parts because they are forgetting that the effects of this technology must be laid out in legislation. Legislation is necessary in order to guide courtrooms on how to proceed when lawyers attempt to offer evidence that is based in large part on advances in science technology.

* J.D. Candidate, University of Notre Dame Law School, 2005; B.A. Fordham University, 2002. The author would like to thank Kim McLeod and the Executive Board Members of the Journal of Legislation for their thoughtful suggestions and guidance in writing this Note. She would also like to thank her parents for always teaching her that nothing is beyond her reach. She would also like to extend thanks to Matthew, David, and Eileen for without their teasing, joking, shouting, crying, and endless laughter she would not be who she is today. Above all, the author would like to thank her husband, Gary, for his endless love, support, and encouragement in the writing of this Note, throughout her years in Law School, and in all the days in between and ever after.

1. Craig M. Cooley, *Forensic Individualization Sciences and the Capital Jury: Are Witherspoon Jurors More Deferential to Suspect Science Than Non-Witherspoon Jurors?* 27 S. ILL. U. L. J. 477, 482 (2003).

2. *See id.* at 482 (“[T]here is an expectation from jurors that such evidence will be presented at trial.”).

Throughout this Note, it will examine a piece of federal legislation,³ which deals not only with new technology, but more specifically with new fingerprinting technology. Thus, the new advances in fingerprinting technology will take up the major focus of this Note. A discussion of such legislation and its immediate ramifications takes place in Part II. In Part III, this Note discusses the new criminal identification technology in general and its significance on the current court system.

Yet, there is a downside to these new technologically advanced fingerprinting programs. Issues arise when new advances in technology are used to take partial fingerprints in order to generate a full print.⁴ Defense attorneys argue that individuals are being convicted on information that is partially produced by a machine. Thus, they see this information as fabricated evidence.⁵ This leads to the conclusion that using technology in this way is unconstitutional and inaccurate.⁶ Therefore, a discussion of the negative ramifications and possible challenges to new fingerprinting legislation and the technology behind it is put forth in Part IV.

Finally, the way this new technology is portrayed in the media, and its effect on the public perception, which has ramifications for the justice system, is discussed in Part V. For example, since this technology is operated by computers, it allows experts to introduce fingerprinting evidence in a 3D color view, rather than the traditional flat black and white perspective. Many jurors now expect to see these advancements in technology utilized both in the criminal investigation and in the courtroom. But what if their expectations are too high?⁷ Perhaps because of popular television shows such as *CSI*⁸ and the ever expanding *Law and Order* franchise,⁹ jurors expect the partial print computer-generated analysis of which the statute may not even allow. What happens when the prosecution is barred from giving the jury what they expect? Is a result of this simply that criminals go free? These questions should be thoroughly investigated when evaluating statutes which call for advancements in technology in the criminal field.

In conclusion, this Note argues that instead of barring this technology from the courtroom, legislators must take the important step of setting standards to ensure that all fingerprints admitted into evidence are verifiably unaltered. Only then can we ensure that justice will prevail, and this proposed law will work to reign in jurors' exorbitant expectations of technology in the courtroom.

3. See Crime Identification Technology Act of 1998, 42 U.S.C. § 14601 (2000).

4. See generally Edward J. Imwinkelried & Michael Cherry, *The Myth of Fingerprints*, 27 CHAMPION 36, 36 (2003) [hereinafter *Myth*].

5. See, e.g., Robert Epstein, *Fingerprints Meet Daubert: The Myth of Fingerprint "Science" is Revealed*, 75 S. CAL. L. REV. 605, 649 (2002) ("[A] number of defense attorneys have already filed motions contesting the admissibility of latent fingerprint identification evidence."). See also *Myth*, *supra* note 4, at 36 ("[I]n some cases, the image compared to the inked impression is one which the police have in a very real sense created.").

6. Epstein, *supra* note 5, at 617 (describing how once courts accepted fingerprinting identification as evidence, they did not revisit the matter.) "In not one of these opinions, however, did a court consider the essential question of the reliability of latent fingerprint identifications." *Id.*

7. See, e.g., Gary S. Gildin, *Reality Programming Lessons for Twenty-First Century Trial Lawyering*, 31 STETSON L. REV. 61, 75 (2001) ("Generation Xers have experienced all of life and learning visually; thus, words without images are unlikely to interest or persuade them.").

8. See *infra* note 135.

9. See *infra* note 138.

II. LEGISLATION FOR THE TWENTY-FIRST CENTURY: A PUSH FOR NEW FINGERPRINTING TECHNOLOGY

The criminal justice system must adapt to changing technology and greater expectations of jurors. Legislation has been slow to address these needs.¹⁰ However, in recent years, Congress made some effort to fill in these gaps and set an example for states to follow. Congress has tried to allow for advances in technology that would bring in a whole new type of physical evidence to the courtroom. Recognizing the role physical evidence plays in a conviction,¹¹ Congress attempted to boost the resources of agencies in charge of gathering this evidence. As a result, and in an effort to keep in pace with advancing technology, the federal government instituted a state grant program under the Crime Identification Technology Act.¹² The purpose of this act is “to establish or upgrade an integrated approach to develop information and identification technologies and systems.”¹³ The federal government offered to pay up to ninety percent of the costs of these systems to applying states.¹⁴ These improved systems include:

- automated fingerprinting identification systems that are compatible with standards established by the National Institute of Standards and Technology¹⁵ and interoperable with the Integrated Automated Fingerprint Identification System (IAFIS) of the Federal Bureau of Investigation;¹⁶
- finger imaging, live scan, and other automated systems to digitize fingerprints and to communicate prints in a manner that is compatible with standards established by the National Institute of Standards and Technology and interoperable with systems operated by States and by the Federal Bureau of Investigation.¹⁷

10. But see John P. Tribuiano III, *Review of Selected 2002 California Legislation: Crimes: The Continued Expansion of the DNA Database: California's Response to September 11th*, 34 MCGEORGE L. REV. 405, 405 (2003) (describing how California took quick action after September 11, 2001 “by enacting Chapter 160, which requires individuals convicted of felonious terrorist offenses to provide deoxyribonucleic acid (DNA) for inclusion in the state database”). This article also notes that “all fifty states have passed DNA database statutes for the purpose of solving various classes of unsolved crimes.” *Id.*

11. See Cooley, *supra* note 1, at 483 (“Physical evidence is essential because research indicates that jurors’ decisions are ‘significantly influenced’ by ‘[p]hysical evidence which often ties the defendant to the scene of the crime.’”) (citing Christy A. Visher, *Juror Decision Making: The Importance of Evidence*, 11 LAW & HUM. BEHAV. 1, 13 (1987)).

12. 42 U.S.C. § 14601 (2000).

13. *Id.*

14. *Id.*

15. The National Institute of Standards and Technology’s (“NIST”) “mission is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life.” See NIST General Information, available at http://www.nist.gov/public_affairs/general2.htm (last visited Apr. 2, 2005).

16. The FBI instituted the Integrated Automated Fingerprint Identification System (“IAFIS”) in 1999. See Florence Olsen, *Working Day and Night, FBI Finishes IAFIS Code*, GCN NEWS (1999), available at http://www.gcn.com/18_12/news/34646-1.html (last visited Apr. 2, 2005).

17. 42 U.S.C. § 14601 (b)(2), (b)(3) (2000).

These grants allow, and indeed are a push, for states to update their systems. The bill provides funding for new technological systems, which is an important step in the attempt to bring the investigative tools of police and prosecutors up-to-date. This legislation also signifies a recognition by Congress that it is time for the criminal justice system to come into the twenty-first century.

As these new systems came into practice, they revolutionized fingerprinting as used both in the investigation of crimes and as evidentiary material in a courtroom. Technology, in general, makes it possible to yield clearer and more accurate fingerprint matches. One important technological advancement is the ability of computers to remove background patterns and “lift” a fingerprint, which produces a full print capable of being matched to a criminal suspect.¹⁸ Because of technological advancements, what was once a useless print has now become a key piece of evidence in solving a criminal case.

Questions do arise as a result of this legislation. For example, how much new technology does this federal statute expect when it seeks to use systems to communicate prints in a manner that is compatible with the standards “established by the National Institute of Standards and Technology?”¹⁹ According to a summary of the standards put forth by the NIST, the applicable standards listed are numerous and in-depth, which ensures accuracy in these new fingerprinting systems.²⁰ However, these standards only address the actual fingerprint scanning machines²¹ for accuracy and testing, and fail to address other major concerns that must be considered in using this new fingerprinting technology. For example, the standards to which the systems must comport do not stipulate what information can be used as evidence in a courtroom. The entire system is designed to extrapolate evidence to be presented in a criminal case, but this legislation makes no mention or reference as to how the evidence will reach its endpoint and what standards it should be held to in the final stage—the courtroom. These issues are cause for concern and will be discussed in depth in Part III. Now, it may be more relevant to view the actual science behind this fingerprint technology and its overall value.

III. CRIMINAL IDENTIFICATION TECHNOLOGY²²

“The science of fingerprints was the first forensic science that caught the public’s imagination and also provided a valuable tool for police and criminal investigators.”²³ Over a hundred years have passed since this art was accepted in the different criminal fields.²⁴ Naturally, with the dawning of the present age of computers, it was only a

18. See *infra* notes 40–42 and accompanying text.

19. 42 U.S.C. § 14601(b)(3).

20. See Summary of NIST Standards For Biometric Accuracy, Tamper Resistance, and Interoperability, available at http://www.itl.nist.gov/iad/894.03/NISTAPP_Nov02.pdf (last visited Apr. 3, 2005).

21. These machines are part of the Live Scan system. For a discussion of this technology, see *infra* text accompanying note 25.

22. This is the title given to the subchapter which discusses fingerprinting technology in 42 U.S.C. § 14601 (2000).

23. Simon A. Cole, Book Review, *Suspect Identities: A History of Fingerprinting and Criminal Identification*, 50 FED. LAW 46, 47 (Aug. 2003) [hereinafter *Suspect Identities*].

24. See Michael Mears & Therese M. Day, *The Challenge of Fingerprint Comparison Opinions in the Defense of a Criminally Charged Client*, 19 GA. ST. U. L. REV. 705, 711 (2003) (“The human physiological

matter of time before digitalized fingerprinting was created, giving the art of fingerprinting a much needed face lift. The problems with ink fingerprinting (the traditional method of printing), such as “smudging, smearing, and over or under inking,”²⁵ coupled with the time-consuming process of comparing prints were enough for a computerized alternative to be sought. The Federal Bureau of Investigation (“FBI”) led the pack in the search and implementation of a new system. The first step in the process required a government agency, in this case the FBI, to copy all “hard” copies (paper copies) kept in the federal registrar into digital format.²⁶ In total, over forty million fingerprint records were transcribed into the FBI’s IAFIS system.²⁷ Once all the fingerprints were digitalized, it became necessary to create a system capable of transmitting a new fingerprint onto a computer instead of with ink. The program also had to be able to compare the print to those in the database in order to find a match.²⁸ Live Scan produced the answer to the search.²⁹ One article succinctly described how the process works:

Finger imaging is the process of using computer equipment to scan fingerprint impressions and to extract identifiable characteristics. . . . The computer’s scanning and mapping algorithms convert the spatial relationship of a fingerprint’s minutiae points as well [as] the ridge direction and ridge contour information into a digitized representation of the fingerprint. Before conducting a search, the technician may enhance the prints to include cuts or breaks in the ridges caused by scars or burns. The computer does not actually compare one fingerprint against another, but rather conducts a mathematical search. The computer’s search algorithm converts the data extracted by the scanner into a binary code which is then used to search the computer’s files. The computer, using a component called a matcher, can search a candidate print against the file prints at a rate of 500 to 600 prints per second.³⁰

Once the IAFIS system was in place and proved successful, Congress took notice. Shortly after the implementation of the FBI database, Congress passed the Criminal Identification Technology Act³¹ to encourage states to adopt this or similar systems.

feature commonly called fingerprints had been recognized for centuries in China and India before Europeans ‘invented’ it in the late nineteenth century and disseminated the Anglo-American system of fingerprint identification.”) (citing Simon Cole, *What Counts for Identity? The Historical Origins of the Methodology of Latent Fingerprint Identification*, 12 SCI. IN CONTEXT 139, 147 (1999)). In fact, this evidence has been so well received that “proponents of other forms of scientific evidence have routinely named their respective technologies to evoke the certainty and reliability of fingerprints, leading to such nomenclature as DNA fingerprinting, ballistic fingerprinting, and even nuclear fingerprinting.” Nathan Benedict, Note, *Fingerprints and the Daubert Standard for Admission of Scientific Evidence: Why Fingerprints Fail and a Proposed Remedy*, 46 ARIZ. L. REV. 519, 520 (2004) (citations omitted).

25. See Live Scan, available at <http://www.livescanfingerprinting.com/quest.htm> (last visited Apr. 3, 2005).

26. See Olsen, *supra* note 16.

27. Status of INDENT/IAFIS Integration, available at <http://www.usdoj.gov/oig/inspection/plus/0203/back.htm> (last visited Apr. 3, 2005).

28. See *Suspect Identities supra* note 23, at 47 (“It does no good to have matching fingerprints unless one can recognize that they match. A method is needed to describe the whorls and ridges.”).

29. See generally Live Scan, *supra* note 25.

30. Jennifer K. Constance, Comment, *Automated Fingerprint Identification Systems: Issues and Options Surrounding Their Use to Prevent Welfare Fraud*, 59 ALB. L. REV. 399, 401 (1995).

31. 42 U.S.C. § 14601 (2000).

After the federal government passed this legislative incentive, which would help defer the costs of implementing comparative state systems,³² several states took advantage of the offer.³³

Those states that implemented the systems received tremendous benefits as a result. In New York, it was reported:

[d]uring Fiscal Year 2002, the period of time when a person was arrested to when their [sic] criminal record was received from [the] [Division of Criminal Justice Services] was an average of 4.68 hours. Prior to the implementation of Live Scan, it took an average of 13.61 hours to receive a criminal record.³⁴

Additionally, “[w]ith Live Scan, the fingerprint rejection rate has gone from approximately 30% to 3.1%.”³⁵ One Washington state police lieutenant described the practical effects of the rapid exchange of information: “Live Scan will cut down on the time it takes to identify people who lie about their identities when they are booked into jail.”³⁶ He also noted that, “[i]f you have someone who is drunk or combative, they can smear all over the place and you can’t use them. Live Scan won’t accept fingerprints unless they’re perfect.”³⁷

Many states chose to implement the system by using the FBI database to compare the digital prints that are taken from suspects, but several other states also developed their own databases using Automated Fingerprint Identification System (“AFIS”) computers.³⁸ These state systems are often created to work together with the FBI system so that a state can access both the AFIS and IAFIS databases in order to reach the largest number of possible prints to determine a successful “match.”³⁹ The rewards of the digitalization of fingerprints are obvious when viewed in this light. States with the program have instant access to both the Federal criminal database and to a large number of fellow participating state databases. Therefore, finding a criminal suspect can now be done in a much smoother, timely, and cost efficient manner.

32. *Id.*

33. See CAL. HEALTH AND SAFETY CODE § 1522.04 (1997) (“The Legislature supports the use of the fingerprint live-scan technology, as identified in the long-range plan of the Department of Justice, for fully automating the process of fingerprints and other data by the year 1999, otherwise known as the California Crime Information Intelligence System (CALCII) to be used for applicant fingerprints.”). See also CONN. GEN. STAT. § 29-12 (2004) (“The Commissioner of Public Safety may adopt regulations for the submission to and the taking of fingerprints as required under this section which will promote efficiency and be consistent with advances in automation and technology.”).

34. NYPD Criminal Justice Bureau—New Initiatives available at <http://www.nyc.gov/html/nypd/html/cjb/initiatives.html> (last visited Apr. 2, 2005).

35. *Id.*

36. Staff Reporter, *Police Upgrade Fingerprinting Technology—Bellevue Police Start Using Live Scan*, KING COUNTY J., Dec. 31, 2000, available at <http://www.kingcountyjournal.com/sited/story/html/39493> (last visited Apr. 3, 2005).

37. *Id.*

38. See Jessica M. Sombat, Note, *Latent Justice: Daubert’s Impact on the Evaluation of Fingerprint Identification Testimony*, 70 FORDHAM L. REV. 2819, 2832 (2002).

39. See 42 U.S.C.A. § 14601 (West Supp. 2004). Notice (as previously stated, see *supra* text accompanying note 19) this law specifies that these systems have to be “interoperable with systems operated by States and by the Federal Bureau of Investigation” in order to receive the federal grants. *Id.*

Time and money, however, are not the only benefits these systems afford. After fingerprints are converted into digital format to be used in such systems, the possibilities of technological advancements are endless. One such possibility is image enhancement.⁴⁰ Image enhancement is the process by which background patterns and colors can be subtracted from a picture of a latent print.⁴¹ Latent fingerprints often refer to the “small . . . fingerprint fragments detected at crime scenes” from which fingerprint identifications are made.⁴² These new technological advances dramatically change crime scene investigation. For example, this technology enables an expert to use image enhancement to “lift” a rapist’s bloody print left on a bed sheet. The expert can view such a print clearly when the weave from the sheet is lifted out of the picture by way of image enhancement. Analysts also use image enhancement to remove other “patterns from original latent fingerprints, including the background printing on a check, the dot pattern on newsprint, and the weave pattern on material that would otherwise interfere with identification.”⁴³ This new technology made breakthroughs, not only in new crimes, but also in old “cold cases” left unsolved until this new technology developed.

These digital fingerprinting systems also revolutionized the courtroom. Because of the digital format, these prints are easily produced into juror-friendly trial exhibits.⁴⁴ At a criminal trial, any “expert with the right software can convert the files from their proprietary format into Adobe Acrobat TM files containing images that can easily be inserted into PowerPoint TM and Microsoft Word TM documents.”⁴⁵ This means that instead of passing around sheet after sheet of black and white photocopies of the evidence gathered, jurors can view evidence in color on a large screen in a slide-show format. Not only is this technology useful for fingerprint comparisons, but experts can also use it to demonstrate how certain prints were actually deposited.⁴⁶ This format is an extremely persuasive aide for an expert in his attempt to describe his findings to a jury of lay people. Additionally, crime lab experts easily “produce the electronic data that underlie their conclusions.”⁴⁷ They can quite effortlessly duplicate the files from the case by saving them onto any storage instrument.⁴⁸ This allows the expert to not only present the evidence clearly to the jury, but it also provides for easy replication of data for discovery purposes.⁴⁹

40. See Michael Cherry, *Reasons to Challenge Digital Evidence and Electronic Photography*, 27 CHAMPION 42, 42 (July 2003) (quoting CBS News, *60 Minutes II, The Hidden Clue*) (“Detectives now have a new tool for cracking even the toughest of cases,” Jim Stewart reported. “Known as digital fingerprint enhancement, it’s become the silver bullet among police forensic units all across the country.”) (citations omitted).

41. *Myth*, *supra* note 4, at 36.

42. Epstein, *supra* note 5, at 607.

43. *Myth*, *supra* note 4, at 36.

44. See William C. Thompson et. al., *Part 2: Evaluating Forensic DNA Evidence: Essential Elements of a Competent Defense Review: Breaking Open the Black Box: How to Review the Electronic Data*, 27 CHAMPION 24, 25 (May 2003) (“The electronic files are also useful for producing trial exhibits.”).

45. *Id.*

46. See Kasey Wertheim, *Adobe Photoshop for Demonstrating Latent Print Uniqueness*, 53 J. FORENSIC IDENTIFICATION 707, 720 (2003).

47. Thompson et. al., *supra* note 44, at 25.

48. See *id.*

49. See *id.* (“There is no legitimate excuse for refusing to turn over electronic data for defense review.”).

Although many states took advantage of the federal subsidy program for advancing technology for criminal identification systems, others have yet to respond to the demands of improving technology in the criminal field. The federal government has exerted great efforts by offering generous monetary inducements through the Criminal Identification Technology Act in order to encourage states to upgrade their criminal databases.⁵⁰ Therefore, while this new technology is expensive to implement, with federal subsidies, and remarkable overall time saving and processing benefits, states that have not adopted the systems are clearly imprudent. However, as states begin utilizing these new systems, they quickly learn that this new technology does come with problems, including cause for some constitutional concerns.

IV. NEGATIVE RAMIFICATIONS OF NEW FINGERPRINTING TECHNOLOGY

A. Technical Problems Caused By a Lack of Standards

Although many of the benefits of new fingerprinting technology, such as image enhancement, appear obvious, the flaws are not as easily observable. Michael Cherry claims, "As a voting member of the evidentiary committee of The Association for Information and Image Management (AIIM) and a pioneer in image management and digital photography going back to the early NASA days, I know it's very difficult to perform a proper enhancement, particularly a fingerprint enhancement."⁵¹ For example, Cherry points to the fact that "[e]ven unsophisticated image enhancements can render some crime scene details and fingerprint minutiae unprintable."⁵²

The image itself is not the only cause for concern. It is important to also evaluate the digital printer and camera that took the image because "[i]n many instances, the digital printer used is not as accurate as the digital camera used, and therefore crime scene details and fingerprint minutiae is lost."⁵³ Additionally, "[d]odge-and-burn, the selective lighting and darkening of areas within an image, can place details outside of the threshold of a digital printer's range of light and dark printing capabilities."⁵⁴ Unfortunately, even if Congress wanted to set some standard for the type of printer and camera that is acceptable for generating evidence, they could not. This is simply because such legislation cannot keep up with the rapidly evolving technology in this area. Nevertheless, many agree that as this new technology is brought into the courtroom, it is still important that the law is not lost amidst the wondrous technology.⁵⁵ Currently, there are no standards governing any courtroom technology and clearly some are needed. Instead of regulating cameras, computers, and printers, which as already

50. 42 U.S.C. § 14601 (2000).

51. Cherry, *supra* note 40, at 42. Also stating, "Digital enhancement is highly controversial within the imaging community." *Id.*

52. *Id.*

53. *Id.*

54. *Id.*

55. See, e.g., Jill Witkowski, Note, *Can Juries Really Believe What They See? New Foundational Requirements for the Authentication of Digital Images*, 10 WASH. U. J. L. & POL'Y 267 (2002).

stated would be fruitless, guidelines should be created for the information produced from these systems.

While Congress is updating some legislation such as the Criminal Identification Technology Act, this selective process causes more issues to arise. Thus, as the federal government and states implement the fingerprinting systems, the United States Congress is failing to investigate and follow through with laws to govern information stemming from these programs. Judges and lawyers of the courtroom need discernable standards which can enable them to know what evidence is acceptable and what steps should be followed to verify the evidence. As of yet, there are no uniform standards or procedures.

B. New Techniques Raise Constitutional Concerns

Image enhancement is merely one result of digital fingerprinting. Another even more questionable result is image creation.⁵⁶ Most latent fingerprints found at a crime scene are only partial prints.⁵⁷ Therefore, the job of the fingerprint expert is not to compare two full fingerprints to discover a match, but instead to find a match to the partial print. Yet in many cases, the partial print is not large enough to provide enough points of comparison to find *any* match. But, with image creation, the police can take a partial print found at a crime scene, and based on its detail and design, match it with another partial print left at the scene (assumed to be from the same person) to create a full print.⁵⁸ Or, some systems are employed to provide a computer-generated view of what the full print should be based upon the make-up of a partial print.⁵⁹ This then provides the police with a full fingerprint which can be run through a database for suspect comparison.⁶⁰ Although many would applaud technology that allows the authorities to find a killer from twenty years ago, the constitutional issues of presenting such evidence at a trial cannot be denied.⁶¹ Clearly, Fifth Amendment problems arise in this area, since it would be almost impossible to argue that “due process” was followed.⁶²

One important due process problem arises once digital media is used because the possibilities of unreported manipulation are endless.⁶³ This is a huge danger because “[m]anipulation, as distinct from enhancement, consists of changing the elements of a photograph or image by changing the colors, moving items from place to place on the image, or otherwise altering the original image.”⁶⁴ One program that makes image manipulation available at the click of a mouse is Adobe Photoshop TM.⁶⁵ This program

56. *Myth*, *supra* note 4, at 36.

57. Benedict, *supra* note 24, at 532.

58. *Myth*, *supra* note 4, at 36–37 (describing the process of one case which used image creation).

59. *Id.* at 36.

60. *Id.* at 37.

61. See Witkowski, *supra* note 55, at 267 (“Digital imaging is one area in which the legal community may be too hastily adopting new technology without fully considering the ramifications of its use.”).

62. See U.S. CONST. amend. V.

63. See Witkowski, *supra* note 55, at 271 (“Digital images are easier to manipulate than traditional photographs and digital manipulation is more difficult to detect.”).

64. *Id.*

65. See Wertheim, *supra* note 46, at 707.

has an extensive choice of options which can be used for any image.⁶⁶ Although most options do not apply to creating fingerprint exhibits, many fingerprint experts have become wary of using this software.⁶⁷ They realize that if such a program is employed, their findings could easily be attacked for possible manipulation because of the capabilities of Adobe Photoshop TM.⁶⁸ This example illustrates the complexities that arise when new technologically advanced programs are used for the production of courtroom evidence. Although proponents of this technology argue that regular photography can just as easily be doctored, “the potential for making subtle but significant alterations to digital images gives cause for concern that digital images may be unfit for use as evidence in a court of law.”⁶⁹ Thus, when digital evidence is presented in court, it should be held to a higher standard.⁷⁰ That is not to say that this technologically advanced evidence should be precluded from court, but it should certainly be held up against tougher guidelines to ensure that the evidence is constitutional.⁷¹

Despite obvious constitutional concerns, courts are traditionally reluctant to hear evidentiary objections to fingerprinting matches or to even enforce a higher standard for admitting such evidence.⁷² From the first introduction of fingerprints into courtrooms, “judges expressed remarkably little skepticism about the authority of fingerprints, accepting them as legal evidence with tremendous speed and little skepticism.”⁷³ Additionally, “[p]rosecutors often argue that the use of fingerprint identification is reliable because it has been accepted in the scientific community.”⁷⁴ But this argument is circular since it only states “it is verifiable because we use it.”⁷⁵ Even fingerprint technicians find fault with this reasoning, noticing that “[t]here is no justification [for fingerprint identification] based upon conventional science: no theoretical model, statistics or an empirical validation process.”⁷⁶ Therefore, as new fingerprint technology is presented in court, judges rather easily admit these prints into evidence,

66. *Id.*

67. *Id.*

68. *Id.*

69. Witkowski, *supra* note 55, at 272.

70. *But see id.* at 282 (“[M]any members of the law enforcement community have suggested that digital images have not and should not be subject to stricter requirements than traditional photographs.”).

71. *See id.* at 285 (“An authentication test . . . tailored to digital imaging . . . would respond to evidentiary concerns raised by digital imaging.”).

72. Benedict, *supra* note 24, at 543 (“In their quest to maintain the admissibility of fingerprint evidence, courts are extremely reluctant to apply equal scrutiny to fingerprint evidence.”).

73. Jennifer L. Mnookin, *Fingerprint Evidence in an Age of DNA Profiling*, 67 BROOK. L. REV. 13, 22 (2001). *See also* Benedict, *supra* note 24, at 521 (“One judge described fingerprints as “the very archetype of reliable expert testimony . . .”).” *See also Suspect Identities*, *supra* note 23, at 47 (describing one view of the courts’ reasoning for the acceptance of fingerprinting). “The court[s] and other experts recognized that the problem with fingerprinting is not the theory underlying it (fingerprint patterns are unique and unchanging) but the application of the theory.” *Id.*

74. Mears & Day, *supra* note 24, at 720.

75. *Id.*

76. *Id.* at 729 (second alteration in original) (citation omitted). *See also* Simon A. Cole, *Grandfathering Evidence: Fingerprint Admissibility Rulings From Jennings to Llera Plaza and Back Again*, 41 AM. CRIM. L. REV. 1189, 1193 (2004) (describing how shortly after *Daubert* experts were surprised to learn that there was no evidence to show the accuracy of “forensic fingerprint identification”). *See also* Benedict, *supra* note 24, at 528 (“[T]he lynchpin of fingerprint identification—that no two are alike—has never been reliably demonstrated.”).

just as they did with ink-based prints.⁷⁷ Nevertheless, the behavior of the judiciary on this matter finds support throughout the legal community, for even the advisory committee which amends the Federal Rules of Evidence has yet to institute any changes to deal with this technology.⁷⁸ Therefore, many defense attorneys do not even object to the admittance of advanced fingerprinting evidence as a result of the almost guaranteed denial of such a motion.⁷⁹ Yet, new technology itself may also be a reason why defense attorneys quiet their objections. As the legal community shifts towards creating electronically-governed courtrooms, “[t]his trend may discourage lawyers and judges from objecting to electronic images for fear that to do so would be counter-productive to the movement towards convenience promised by increased computer use in litigation.”⁸⁰

But there is evidence that the entire legal field is not satisfied with this standard since “a number of defense attorneys have already filed motions contesting the admissibility of latent fingerprint identification evidence.”⁸¹ Their actions seem to be in vain since, “[t]hus far, there is no reported decision granting such a motion.”⁸² It should be noted that these motions are not based upon any specifically tailored law, because currently within the federal system there are no rules governing the admissibility of this type of evidence.⁸³ Technically, “[i]n the courtroom enhanced digital images are original images that have undergone some computer changes, and it falls to the discretion of a trial judge as to whether they are admissible as duplicates.”⁸⁴ This technical standard is insufficient. It is true that “[f]ingerprints can serve as an identifying characteristic, and new technology such as digitally enhanced photographs

77. See Cole, *supra* note 76, at 1194 (“The main reason that fingerprint evidence lacks evidence of reliability is that the courts—fingerprint examiners’ primary arena for deploying their expertise—never demanded such evidence from them.”).

78. See Witkowski, *supra* note 55, at 284 (“Given that the Federal Rules of Evidence are constantly being amended and that digital imaging has been gaining popularity for a number of years, it is clear that the crafters of the Federal Rules of Evidence have chosen not to deal explicitly with digital imaging.”).

79. See *id.* at 285 (“Digital images are rarely challenged in court.”).

80. *Id.* at 287. But cf. Kenneth J. Markowitz, *Legal Challenges and Market Rewards to the Use and Acceptance of Remote Sensing and Digital Information as Evidence*, 12 DUKE ENVTL. L. & POL’Y F. 219, 220 (2002) (discussing how courts are more reluctant to introduce other advanced technology as evidence).

The use of digital technologies in performing tasks or making decisions that are vulnerable to legal dispute presents significant challenges to the courts in understanding how the information was derived, processed, and presented and in weighing the probative value of the information against its potential to confuse. Despite the tremendous opportunity for technologies to enable more informed, cost-effective decisions, issues of credibility, acceptability, and other evidentiary hurdles are impeding the integration of these technologies into the routine operations performed by public and private . . . stewards.

Id.

81. Epstein, *supra* note 5, at 649.

82. *Id.* at 649–50.

83. See Witkowski, *supra* note 55, at 283 (“Federal Rule 901(b) does not provide significant guidance for authentication of digital images. . . . Witness testimony limited to fair and accurate portrayal testimony omits important information regarding the digital camera settings, including the compression ratio, storage medium, and opportunity for manipulation.”).

84. Cherry, *supra* note 40, at 42. See also FED. R. EVID. 1001(4). Under this rule, it is established that:

A “duplicate” is a counterpart produced by the same impression as the original, or from the same matrix, or by means of photography, including enlargements and miniatures, or by mechanical or electronic re-recording, or by chemical reproduction, or by other equivalent techniques which accurately reproduces the original.

Id.

and expanded computer technology can assist in the development of fingerprint comparison techniques.”⁸⁵ Nonetheless, “the process is presently incomplete and imperfect and not worthy of admission in courts of law.”⁸⁶

C. The Role of the Defense Attorney: A Call To Protect the Rights of the Accused

Some practitioners suggest that defense attorneys should not be discouraged by the courts’ obvious support of fingerprinting evidence.⁸⁷ In order to have a sustainable objection to the fingerprint evidence, a good defense attorney should “no longer assume that the image compared to your client’s inked print was the original crime scene print. That image may have been significantly altered or even manufactured by the police.”⁸⁸ In order to ensure that constitutional safeguards are not trampled by technology, the first step for defense attorneys is awareness. Thus, a criminal defense attorney should “[d]emand to know whether the image compared to your client’s . . . print was the original impression found at the crime scene. If not, how did the police obtain—or generate—the image that was compared?”⁸⁹ What, if any, software was used?⁹⁰ Were proper guidelines followed?⁹¹ If any answers are troubling, the defense attorney may then make a motion *in limine* to exclude the fingerprint testimony of an expert.⁹²

Next, a defense attorney could make a *Daubert* challenge. A *Daubert* challenge comes from the seminal case *Daubert v. Merrell Dow Pharmaceuticals, Inc.*⁹³ In this case, the Supreme Court essentially found that “*Federal Rule of Evidence 702* requires trial judges to act as gatekeepers, excluding expert opinions that lack sufficient reliability.”⁹⁴ In fact, after *Daubert*, the Federal Rules of Evidence were amended in 2000 to reflect the changes made by this decision.⁹⁵ As applied to fingerprinting technology, however, this reliability standard poses problems because there are “fundamental differences between fingerprint experts and other experts.”⁹⁶ This difference is present because, unlike other fields, the fingerprint community “has developed exclusively for litigation and does not have a tradition of disinterested self-testing.”⁹⁷

85. Mears & Day, *supra* note 24, at 759.

86. *Id.*

87. See, e.g., *Myth*, *supra* note 4, at 37.

88. *Id.*

89. *Id.*

90. *Id.*

91. *Id.*

92. *Id.*

93. 509 U.S. 579 (1993).

94. Epstein, *supra* note 5, at 617–18 (referencing 509 U.S. 579 (1993)) (emphasis in original).

95. See FED. R. EVID. 702 (The rule now calls for a three part test to determine if a witness qualified as an expert may give testimony. The test to determine if an expert may testify is: “(1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.”).

96. *Recent Case: Evidence—Fingerprint Experts—Seventh Circuit Upholds the Reliability of Expert Testimony Regarding the Source of a Latent Fingerprint*, 115 HARV. L. REV. 2349, 2352 (2002) [hereinafter *Recent Case*].

97. *Id.*

However, because of the innovativeness of this technology, there are few published opinions dealing with a *Daubert* challenge for this new fingerprinting technology.⁹⁸ Additionally, many jurisdictions have yet to rule on the matter of image enhancement and image creation.⁹⁹ But it is important for those seeking such a ruling, and indeed for the judges who issue a ruling, to recognize that the standard is not whether image enhancement or creation is valid as a theory.¹⁰⁰ Rather, the standard “is the accuracy of the particular software which the police laboratory employed to enhance or create the image in question. Under *Daubert*, the prosecution must establish ‘appropriate validation’ for the soundness of that program.”¹⁰¹

Daubert was further explained in the case of *Kumho Tire Co., Ltd. v. Carmichael*.¹⁰² In this case, the Supreme Court expanded the “gatekeeping” aspects of *Daubert* to include all expert testimony, not merely expert testimony which was “scientific.”¹⁰³ *Kumho* would seem to make a *Daubert* challenge more likely, since there could no longer be an argument that fingerprint experts were not “scientific” because now all experts are subject to the “gatekeeping” determinations of the Court. However, whatever help *Kumho* brings is only a mere plank in the bridge to gap the commonly held view by most judges that fingerprinting technology should sustain a *Daubert* challenge.¹⁰⁴ After *Kumho*, one federal district judge was brave enough to restrict fingerprinting expert analysis in his courtroom. In *United States v. Llera-Plaza*,¹⁰⁵ Judge Pollak found that expert fingerprint testimony did not fulfill *Daubert*’s standards.¹⁰⁶ However, after much backlash within the law community,¹⁰⁷ and after reviewing practices in England, the court reversed itself in *United States v. Llera-Plaza II*,¹⁰⁸ with Judge Pollak stating, “In short, I have changed my mind.”¹⁰⁹ With this

98. *Myth*, *supra* note 4, at 37. *But see* *United States v. Crisp*, 324 F.3d 261 (4th Cir. 2003) (finding fingerprinting to sustain a *Daubert* challenge). “While the admissibility of handwriting evidence in the post-*Daubert* world appears to be a matter of first impression for our Court, every circuit to have addressed the issue has concluded, as on the fingerprint issue, that such evidence is properly admissible.” *Id.* at 270. *See also* *United States v. Hernandez*, 299 F.3d 984 (8th Cir. 2002) (fingerprint identification satisfies *Daubert*).

99. *Myth*, *supra* note 4, at 37.

100. *Id.*

101. *Id.*

102. 526 U.S. 137 (1999).

103. *Id.* at 138 (“[I]t would prove difficult, if not impossible, for judges to administer evidentiary rules under which a “gatekeeping” obligation depended upon a distinction between “scientific” knowledge and “technical” or “other specialized” knowledge, since there is no clear line dividing the one from the others and no convincing need to make such distinctions.”).

104. *See* *Sombat*, *supra* note 38, at 2822. (“[O]ne judge wrote after allowing the admission of fingerprint evidence at trial, ‘[t]he court’s decision may strike some as comparable to a breathless announcement that the sky is blue and the sun rose in the east yesterday.’”) (quoting Hamilton, J., *United States v. Havvard*, 117 F.Supp. 2d 848, 849 (S.D. Ind. 2000), *aff’d*, 260 F.3d 597 (7th Cir. 2001)).

105. No. CR 98-362-10, 2002 WL 27305, at *1 (E.D. Pa. Jan. 7, 2002).

106. *Id.* at *18.

107. *See* D.H. Kaye, *The Nonscience of Fingerprinting: United States v. Llera-Plaza*, 21 QUINNIPIAC L. REV. 1073, 1073–74 (2003)

The ruling sent shock waves through the community of fingerprint analysts, the FBI, and the Department of Justice. The case became front page news. Fearing that “prosecutorial effectiveness . . . would be seriously compromised,” the government *urged* the court to reconsider its order that the fingerprint analysis could not testify that the defendant was the source of the print in question. (emphasis added) (citation omitted). *See also* *Myth*, *supra* note 4, at 36 (explaining how “the forensic science community was stunned when Judge Pollak excluded fingerprint testimony”).

108. 188 F.Supp. 2d 549 (E.D. Pa. 2002).

reversal, the hopes of many that courts would review fingerprinting practices more stringently were quickly dashed.¹¹⁰

But all hope is not lost, for if a *Daubert* challenge proves to be fruitless, a defense attorney can still make other objections at trial. For example, practitioners can employ the “best evidence rule”¹¹¹ to require that proponents offer the original crime scene image at trial.¹¹² This should present a successful alternative, because, as one author has pointed out, “[i]n the case of image enhancement, the computer has subtracted pixels and changed the image. It is undeniable that the enhanced image differs from the original. At the very least, the enhanced image is an incomplete version of the original image.”¹¹³

However, if defense attorneys are successful in keeping image enhanced or image created fingerprints out of the courtroom, then new problems arise for the prosecution, who must convince a jury to convict despite the suppression of this evidence.

V. HOW NEW TECHNOLOGY AFFECTS THE MEDIA AND JURY EXPECTATIONS

If criminal court judges ban this new fingerprinting technology based upon constitutional concerns, a successful *Daubert* challenge,¹¹⁴ or the Federal Rules of Evidence, the prosecution may be faced with a heavy burden in attempting to convince jurors to issue a conviction. This is because “[d]eterminations of validity are not made in a vacuum; our ideas of [the] plausible and our notions of the persuasive dramatically affect how skeptically we view a new technique.”¹¹⁵ Because our ideas of plausibility and our expectations are highly influenced by media enterprises such as television and motion pictures, we can look to these genres to find the standards which many perceive to be applicable in the courtroom. The problem with these standards is evident because “TV has romanticized forensic science . . . [and] [a]ll this creates unrealistic expectations in the minds of the public and juries.”¹¹⁶

A. Jury Expectations in the New Millennium

It is no surprise to find that juries expect to have fingerprint evidence presented during most criminal trials.¹¹⁷ One attorney reports that, “his current practice is that in

109. *Id.* at 576.

110. See *Recent Case*, *supra* note 96, at 2355 (“[F]or fields that do not have traditions of disinterested self-testing, the trial judge’s role as gatekeeper must be a more proactive one.”).

111. See FED. R. EVID. 1002. This rule is often referred to as “the best evidence rule.”

112. *Myth*, *supra* note 4, at 38.

113. *Id.*

114. Such an outcome is, however, highly unlikely.

115. Mnookin, *supra* note 73, at 69.

116. Cooley, *supra* note 1, at 477 (citations omitted). See also Carlene Hempel, *TV’s Whodunit Effect Police Dramas Are Having an Unexpected Impact in the Real World: The Public Thinks Every Crime Can Be Solved, and Solved Now—Just Like on Television*, BOSTON GLOBE, Feb. 9, 2003 (Magazine), at 13 (“It’s just that sometimes the shows do more harm than good. . . . [TV] educates the jury, and they grow to expect the same from [real-life criminalists]. That’s dangerous. Hollywood has to stretch it to keep you interested. In real life [criminalists] can’t.”) (internal citations omitted).

117. See e.g., Benedict, *supra* note 24, at 520–21 (“In one survey of nearly 1000 jurors, 85% believed fingerprints to be the most reliable method of identification.”). Cf. Hempel, *supra* note 116, at 13 (“[TV] has

any case in which a juror might expect fingerprint evidence but fingerprint evidence is lacking, he goes out of his way to put a fingerprint technician on the stand to explain the lack of fingerprint evidence.”¹¹⁸ The author notes that, “The expectation is so high and widespread that any prosecutor risks an unjustified acquittal if he or she disregards that expectation. If that expectation is disappointed, that disappointment may be the cause of an acquittal.”¹¹⁹ For example, in the recent case of Robert Blake, who was on trial for the murder of his wife, Bonny Lee Bakley, jurors admitted that they were expecting to see more convincing evidence.¹²⁰ Robert Blake was acquitted of murder, perhaps in part because of the effect of shows like *CSI*.¹²¹ In fact, juror Cecilia Maldonado acknowledged that she “expected so much more” and admitted that television shows such as *CSI* produced “a higher expectation” for her.¹²² In effect, at least one juror’s disappointment with the evidence helped produce Blake’s acquittal.¹²³

Several studies have discovered that juries are becoming more modern themselves.¹²⁴ For example, by the year 2000, forty-one percent of the jury pool was made up of Generation X—that is individuals born between the years 1966 and 1976.¹²⁵ Recognizing that the jury will be made up of Generation X, trial lawyers must “adapt both the substance and manner of their presentations to the contemporary juror.”¹²⁶ This means that if an attorney is to have any chance of success, she must keep the interest and attention of the jury.¹²⁷ It is important to realize that “Generation Xers have experienced all of life and learning visually; thus, words without images are unlikely to interest or persuade them.”¹²⁸ Juries not only expect to be given visuals, but they expect many of them. “The days when the lawyer’s oratorical skills alone could sustain the interest of and convince a jury are past.”¹²⁹ Therefore, as technology advances, so do juror expectations, for “[a] forensic science makes advances in proving

contributed to jurors’ desire to see more forensic testimony from the stand.”)

118. Edward J. Imwinkelried, *The Standard for Admitting Scientific Evidence: A Critique From the Prospective of Juror Psychology*, 100 MIL. L. REV. 99, 107 (1983) (citing the practice of E.J. Salinas, author of National Association of District Attorney’s *Predicate Questions* manual).

119. *Id.* But see Hempel, *supra* note 116, at 13 (describing how not all lawyers view it as a good effect). “[I]t has spurred a phenomenon that defense lawyers call “junk science,” in which high-paid, underqualified consultants are hired to lend a little razzle-dazzle to a case.” *Id.* Also noting, “This is a breed of witness, no doubt glorified by these TV shows, . . . who pitch themselves as forensic experts but lack the necessary education and experience. Because of the demand, though, they’ve starting swarming courthouses like cockroaches to an open refrigerator.” *Id.* Also, “It wastes time and money, . . . with prosecutors starting to demand sophisticated forensic tests that often have nothing to do with the case.” *Id.*

120. Andrew Blankstein & Jean Guccione, *The Blake Verdict and the ‘CSI Effect,’* CHI. TRIB., March 22, 2005, Zone C, at 1.

121. *Id.*

122. *Id.*

123. *Id.*

124. See Gildin, *supra* note 7, at 61–62. See also Cooley, *supra* note 1, at 488 (“Neil Vidmar and Shari Diamond have done research concerning juries and scientific evidence and they found, for the most part, that [c]laims about jury incompetence and irresponsibility in assessing and considering the testimony of scientific experts [have] not [been] supported by research findings.”) (quoting Neil Vidmar & Shari Diamond, *Juries and Expert Evidence*, 66 BROOK. L. REV. 1121, 1174 (2001)) (alteration in original).

125. See Gilden, *supra* note 7, at 61 (reporting that Generation X consists of 78.2 million Americans).

126. *Id.*

127. *Id.* at 65.

128. *Id.* at 75.

129. *Id.*

guilt and innocence, we have come to expect a forensic key that will solve every crime.”¹³⁰

Once fingerprinting technology takes place, it is easy to present this data in a new and improved format to a jury.¹³¹ Jurors can now receive colorized and 3D fingerprint evidence. Gone are the days of flat black and white ink photo-copied prints. Now, fingerprint comparisons are presented to juries through live computer slide shows available in “smart” courtrooms.¹³² The similar markings which make one print match another can be put into vibrant colors in order to conclusively illustrate the “match” to the jury. These are ways in which technology can aid attorneys who struggle to convince the Generation X members of their jury to find for their side.

B. Technology Infuses the Media and the Media Influences Jurors' Perceptions

Jury expectations are important to consider, but what happens when expectations are too high?¹³³ Current television productions incorporate new fingerprinting technology into shows that viewers experience on a daily basis. The technology that is depicted in these programs is often fictional and science does not frequently provide clear cut answers because real life is not that simple.¹³⁴ Yet with the success of a new era of crime shows such as *CSI*,¹³⁵ *Cold Case*,¹³⁶ *Without a Trace*,¹³⁷ and the endless *Law and Order*¹³⁸ shows, prospective jurors have come to expect the latest technology to be presented to them in a trial.¹³⁹

130. Jessica Snyder Sachs, Book Review, *Corpse: Nature, Forensics, and the Struggle to Pinpoint the Time of Death*, 50 FED. LAW. 46, 46 (Aug. 2003).

131. See D. Michael Risinger, *John Henry Wigmore, Johnny Lynn Old Chief, and "Legitimate Moral Force"—Keeping the Courtroom Safe for Heartstrings and Gore*, 49 HASTINGS L.J. 403, 454–55 (1998) (“[T]echnology continues to increase our ability to bring ever more graphic and impactful representations into the courtroom.”).

132. These “smart” courtrooms, which are wired for computer technology, enable lawyers to present evidence through computer projected screens via programs such as Microsoft PowerPoint TM.

133. See, e.g., Blankstein & Guccione, *supra* note 120. “There is no doubt that there’s increasing expectation by jurors of [the evidence] they’re going to see.” (quoting Joshua Marquis, an Oregon prosecutor and member of the board of directors of the National District Attorneys Association) (alteration in original).

134. Sachs, *supra* note 130, at 46.

135. *CSI: Crime Scene Investigation* is a CBS hit show which has dominated the Nielson Ratings since its premiere in October of 2000 and has spawned a hit spin-off—*CSI: Miami*. See generally *CSI on CBS, available at* <http://www.cbs.com/primetime/csi/main.shtml> (last visited Apr. 3, 2005). See also Nielson Television Ratings, *available at* <http://www.nielsenmedia.com> (last visited Apr. 3, 2005); Jon M. Sands & Robyn Greenberg Varcoe, *A Graphic Crime Scene: Daubert and the Evolving Standards for Forensic Evidence*, 27 CHAMPION 22, 23 (2003) (describing how the public is “keenly attuned to the subject” of forensic evidence and how “hit shows such as *CSI* reflect this interest”).

136. From the makers of *CSI*, this show looks at old unsolved cases and uses advances in technology to reevaluate and eventually solve them. See generally *Cold Case, available at* http://www.cbs.com/primetime/cold_case/ (last visited Apr. 3, 2005).

137. This show, also produced by CBS, uses technology to find missing persons in record time. See generally *Without A Trace, available at* http://www.cbs.com/primetimewithout_a_trace/ (last visited Apr. 2, 2005).

138. The original *Law and Order* series is currently in its 14th season, and in recent years has produced two successful spin-offs. See generally *Law & Order, available at* http://www.nbc.com/Law_&_Order/about/index.html/ (last visited on Apr. 3, 2005).

139. See Sachs, *supra* note 130, at 46 (“The public itself has a new awareness of forensic tools, provided by the media and television programs such as ‘*CSI*,’ that feature the latest forensic wrinkle to solve the ‘whodunit.’”). See also Blankstein & Guccione, *supra* note 120 (quoting Barry Scheck, president of the

Additionally, real life television is also to blame for the increased awareness of forensic evidence. For example, “[f]or three weeks in October 2002, America’s attention was captivated by the sniper shootings in and around the Virginia, Maryland, and Washington, D.C. areas. . . . [But] [i]ronically, while firearm identification linked the shootings, fingerprint evidence actually provided law enforcement their biggest break.”¹⁴⁰ As the mayor of Montgomery described it, “[a]fter we submitted that fingerprint, you saw this case break wide open . . . [t]his print put a name with the sniper.”¹⁴¹ A huge sector of the public viewed the crucial importance of fingerprint identification just by watching television.

As a practical result of the television exposure of forensic evidence, some trial attorneys take into account its effect on jury expectations. These attorneys work to feed jurors’ desire for forensic evidence. One commentator suggests, “If a jury’s expectations and interest can justify in-court displays which add no useably relevant information, it would seem to suggest some right to dramatic presentation independent of relevance.”¹⁴²

It is difficult to convince a jury that what they see every day is not what happens in real life.¹⁴³ Therefore, some of this technologically advanced evidence must be presented if a prosecutor is to be successful.¹⁴⁴ If, however, the technology is banned from a courtroom, a jury may not be as likely to issue a conviction.¹⁴⁵ This, of course, is helpful to defense attorneys, but is justice being done? Are juror expectations so high as to surpass what constitutional limits will allow? If the latest technology is banned because of due process concerns, is due process and the right to a fair trial truly being preserved if juries refuse to convict a suspect without this evidence? Surely, if it is looked at logically by even an average citizen, there are problems with a fingerprint being produced electronically by a computer. Yet, if the average citizen is skipping this step, and instead is demanding to be given the evidence portrayed in multi-media enterprises, are we creating a standard with which the prosecution cannot possibly cope? The federal government realizes that technology must be advanced in the

National Association of Criminal Defense Lawyers, as noting that there is “an expectation that people from the crime labs will have super technology to resolve a case”) (internal quotation omitted).

140. Cooley, *supra* note 1, at 478–479. The print of John Malvo was lifted from gun and ammunition magazine in Montgomery, Alabama. *Id.* at 479 (statement of Bobby Bright, mayor of Montgomery, Alabama).

141. *Id.* (alterations in original).

142. Risinger, *supra* note 131, at 440.

143. See, e.g., Dick Clarke, *Experts: CSI Fails Test of Time: Real Crimes Not Solved So Fast, They Say*, THE POST-STANDARD (Syracuse, NY), Apr. 19, 2002, at B5 (describing how even the new systems cannot keep up with expectations). “With the new automated fingerprint system, we can do fingerprints within hours—not within the minutes like they do [on TV].” *Id.* See also Scott D. Pierce, *TV is Entertainment in Spite of Reality Talk*, DESERET MORNING NEWS, Feb. 9, 2003, at C04 (Reporting that one *CSI* technical advisor stated, “We cheat time on our show. . . . It’s not accurate, but it’s a television show and we have to do it.”).

144. See Hempel, *supra* note 116, at 13 (describing one case where a chemist had to explain to a jury why there was not forensic evidence). “Even in the face of eyewitness testimony, ‘Juries are starting to say, “If all that wasn’t done in a case, maybe somebody else had done [the crime].”’” *Id.* (alteration in original) (citation omitted).

145. See *id.* (“They call it the “*CSI* effect,” a phenomenon in which actual investigations are driven by the expectations of the millions of people who watch fake whodunits on TV.”).

courtroom, as evidenced by passing the Criminal Identification Technology Act.¹⁴⁶ Many states are also aware of this emerging trend. But jurors must realize that allowing technological advancements in criminal identification into the courtroom must not be done at the price of our basic constitutional rights. The jury needs to recognize that the people in the courtroom are real, with real rights, which often results in different evidentiary rulings than they view on television. Often we criticize both the legislature and the courts for adapting slowly to changing times. However, a slower pace of change allows us to keep constitutional guarantees in check.

VI. CONCLUSION: A CALL FOR CAREFULLY DRAWN STANDARDS

What is the answer for the prosecutor who is faced with a jury of Generation Xers with preconceived notions of how a courtroom functions? Perhaps it is to approach the problem head-on. Although juries do not like to be lectured, a quick reminder that the world of the courtroom is not *CSI* or *Law and Order*, but rather one filled with real laws, real rules, and real technology may be necessary. The jury needs to be reminded that evidence must be evaluated based upon the standards of the courtroom, and not based upon their own standards. Then, by all means, both the prosecutor and the defense attorney should attempt to give the jury all the evidence, either computerized or not, that is within their capacity to do so. Subsequently, it becomes the job of the judge to make sure this evidence is constitutional before admitting it into the record.

Yet these lawyers and judges need to be guided by clear guidelines outlining the admissibility of technology, and the evidence it generates, in the courtroom. Currently, there are no standards present in federal court dealing with the admission of evidence generated by the new advances in fingerprint technology. Although Congress made a grand attempt to update the criminal system with the implementation of the Criminal Identification Technology Act, these systems are only the beginning of a process. If legislation is going to update one aspect of a process, then logic would call for an update throughout the entire system. So far, Congress has yet to answer this call. The implementation of the IAFIS and Live Scan systems have done wonders for identifying criminal suspects. But if the current court standards do not allow this evidence to be presented in a courtroom, then the time and money spent on these updates has been in vain. It is true that most courts do not think twice about admitting into record fingerprint evidence. And “[i]t is indisputable that fingerprints, when properly employed, can play a vital role in the justice system, both to implicate guilty defendants, and to exonerate innocent suspects.”¹⁴⁷ However, as more attorneys are schooled in the capabilities of the new fingerprint technology and the cause for concern for modifications, courts should be reluctant to allow some fingerprint imagery into evidence. Currently, there is pressure on the criminal defense attorney who “must ensure that fingerprint comparison evidence is used in a criminal prosecution only when it is the result of scientifically reliable analysis by a true expert and not the conjuring of a courtroom Merlin.”¹⁴⁸

146. 42 U.S.C. § 14601 (2000).

147. Benedict, *supra* note 24, at 522 (citation omitted).

148. Mears & Day, *supra* note 24, at 760.

If defense attorneys can sway courts against the time honored tradition of admitting fingerprint evidence, new problems arise. If courts do begin to refuse this evidence, then judicial reluctance is placed in an obvious tension with jury expectations for the latest advancement in forensic science. Above all else, the Constitution must be consulted and upheld. Ultimately, the easiest and most effective way of solving these internal criminal justice system conflicts is for Congress to either continue updating the criminal court system and provide legislation on standards for such evidence, or to request the advisory committee to the Federal Rules of Evidence to adopt some standards for federal judges to follow when viewing evidence created out of the new fingerprinting technology systems.

But what standards should Congress or the advisory committee adopt? The answer is a difficult one to reach, suggesting that the task was purposely set aside because it is too laborious. This new technology is amazing, and it is easy to imagine why a victim would want to use new features such as image enhancement and even image creation in order to find his assailant. But another view is seen by the suspect. How would the suspect's family react upon learning that the evidence against their son was not left by him, but actually generated by a machine? Where is the line drawn? If the line of admitting evidence is too favorable to technology, then defense attorneys are sure to object. However, if all technology is blocked, the prosecutor's job becomes impossible for she will not be able to satisfy jury expectations. A standard that could be set is one where computers can generate full prints from a partial latent print if there are enough points on the partial to draw the conclusion of a match. Yet this begs the question: if there are enough points for a match¹⁴⁹ on the partial, then why would you need the computer to generate anything at all? Additionally, although many see computers as flawless in their calculations, it must be remembered that all computer programs are created by man—who is most definitely fallible.

The use of this technology in the courtroom should be governed by standards which would require all fingerprints admitted to be verifiably unaltered. Therefore, use of image enhancement, where a print would be lifted from its background, would be admissible if an expert could prove that the print itself was not altered. Yet, this means that until it can be proven that a computer can project a full print from a partial print with one-hundred percent accuracy, then constitutional concerns, adopted into standards, should prevent this technology from being presented in court. Therefore, image enhancements, image enlargements to show minutiae of prints, colors to illustrate details, and even 3-D perceptions should be allowable as long as no corruption took place within the actual print. Of course, manipulation is possible, but as previously stated, this is a concern for the present system as well.¹⁵⁰ Hopefully the standard of verification would eliminate the possibility of corruption or print manipulation.

It should be noted that these are simply suggestions. Real standards and guidelines need to come from either Congress, the advisory committee for the Federal Rules of

149. Another debate separate unto itself is that the fingerprint community has no current standards to determine how many points of matching minutiae equal a positive identification. See, e.g., Epstein, *supra* note 5, at 610 (“[T]here is considerable disagreement among fingerprint examiners as to how many common ridge characteristics should be found before an identification is made.”).

150. See Witkowski, *supra* note 55, at 272 (“[S]ome proponents of digital images argue that it is just as easy to manipulate a photograph as it is to manipulate a digital image.”).

Evidence, or some other law making body. The top legal officials and scholars need to take notice of advancing technology and develop standards in order for the field of law to adapt and grow, while at the same time preserving the rights of all Americans guaranteed in the United States Constitution. Until Congress focuses its attention on this important area, then, like our own fingerprints, these rights will continue to be in jeopardy of manipulation.