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"Misconvictions," Science, and the Ministers of Justice

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TABLE OF CONTENTS

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> [W]hen liberty hangs in the balance—and, in the case of the defendants facing the death penalty, life itself—the standards should be higher than were met in this case, and than have been imposed across the country. The more courts admit this type of [expert] evidence without requiring documentation, proficiency testing, or evidence of reliability, the more sloppy practices will endure; we should require more.[1]

I. INTRODUCTION AND OVERVIEW

DNA evidence has exonerated over two hundred wrongfully convicted defendants in the last several years, providing insights into the causes of such convictions. One such cause, faulty scientific evidence, is a focus of this article. For decades, many have written about the prevalence of and reasons for wrongful convictions[2]—what I have termed "misconvictions." A few reasons support the coinage "misconvictions": the *mis*carriage of justice when an innocent person is convicted; the *mis*takes involved in the prosecution and trial of the case; the *mis*taken identification that may have occurred; and finally, the recognition that all wrongful convictions are a *mis*sed opportunity to convict the person who actually committed the crime. In light of these concerns, misconvictions is an apt term.

This Article provides a new perspective on misconvictions by focusing on the intersection of ethics and expert evidence in criminal cases, specifically considering the actions of judges and prosecutors. The Article has a dual focus: first, to explain the forensic science concerns that contribute to misconvictions; and second, to contemplate the role that the "ministers of justice"—the executive and judicial branches—play in creating misconvictions by their management of expert evidence.[3] The Article then provides suggestions for improving the quality of justice to reduce the likelihood of wrongful convictions.

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1. United States v. Green, 405 F. Supp. 2d 104, 109 (D. Mass. 2005) (Gertner, J.) (permitting a witness to testify about the similarity of marks between shell casings at the scene and those from the defendant's weapon but forbidding the witness from testifying that it was a match "to the exclusion of every other firearm in the world").
2. *See, e.g.*, CRIMINAL JUSTICE SECTION, AM. BAR ASS'N, ACHIEVING JUSTICE: FREEING THE INNOCENT, CONVICTING THE GUILTY (Paul Giannelli & Myrna Raeder eds., 2006) [hereinafter ACHIEVING JUSTICE]; EDWIN M. BORCHARD, CONVICTING THE INNOCENT: ERRORS OF CRIMINAL JUSTICE (Yale Univ. Press 1932); SCOTT CHRISTIANSON, INNOCENT: INSIDE WRONGFUL CONVICTION CASES (N.Y. Univ. Press 2004); C. RONALD HUFF, AYRE RATTNER & EDWARD SAGARIN, CONVICTED BUT INNOCENT: WRONGFUL CONVICTION AND PUBLIC POLICY (Sage Publ'ns. 1996); Samuel R. Gross et al., *Exonerations in the United States 1989 Through 2003*, 95 J. CRIM. L. & CRIMINOLOGY 523, 542–46 (2005).
3. A few authors have considered the intersection of ethics and scientific evidence in criminal cases. *See* Bennett L. Gershman, *Misuse of Scientific Evidence By Prosecutors*, 28 OKLA. CITY U. L. REV. 17 (2003) (discussing how prosecutors misuse scientific evidence); Michael J. Saks, *Scientific Evidence and the Ethical Obligation of Attorneys*, 49 CLEV. ST. L. REV. 421, 425–31 (2001) (discussing some ethi-

While trial judges decide whether evidence is admissible in criminal trials, prosecutors wield exceptional power in decisions about whom to prosecute and what evidence to introduce while trying a case. These two ministers of justice—possessing virtually all the power to regulate a criminal case—must be held to a high standard, not only to ensure convictions of those who have committed crimes, but also to ensure that to the degree possible, the innocent are not convicted. Yet prosecutors, by using unreliable forensic evidence and questionable expert witnesses, and judges, by failing to exercise their gatekeeping role in a sufficiently diligent manner, have become part of the mechanism by which misconvictions occur. This Article discusses ways for prosecutors and judges to rise to the ethical demands of their positions.

Part II of this Article details the laboratory failures, the proficiency concerns, and the myriad of problems with the so-called "individualization" specialties that seek to match a person to a crime.

Part III explains how prosecutors, in their role as ministers of justice, have an affirmative duty to try to avoid the wrongful conviction of innocent people by using unreliable expert evidence. The Article provides specific suggestions for achieving that goal. Part IV explains the ethics issues implicated when judges exercise their gatekeeping and trial management roles and also discusses options to help trial courts comply with such ethical obligations.

II. THE SCIENCE OF MISCONVICTIONS

In March of 2003, Josiah Sutton was released from prison after being convicted at the age of 16 and serving nearly four years for a rape he did not commit.[4] The damning evidence against Sutton? DNA, the so-called infallible genetic fingerprint. The exculpatory evidence? Also DNA.[5] This case is one of three in which a faulty DNA comparison was implicated in a misconviction.[6] Clearly, even the best scientific evidence is far from infallible.

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cal concerns related to the use of substandard forensic evidence at trial). Other authors have discussed ethical concerns relating to expert evidence in a primarily civil context. *See, e.g.*, David S. Caudill, *Advocacy, Witnesses, and the Limits of Scientific Knowledge: Is There an Ethical Duty to Evaluate Your Expert's Testimony?*, 39 IDAHO L. REV. 341 (2003); Steven Lubet, *Expert Witnesses: Ethics and Professionalism*, 12 GEO. J. LEGAL ETHICS 465 (1999); Dick Thornburgh, *Junk Science—The Lawyer's Ethical Responsibilities*, 25 FORDHAM URB. L. J. 449 (1998).

4. Roma Khanna & Alan Berstein, *Joyous Sutton Tastes Freedom*, HOUSTON CHRONICLE, Mar. 13, 2003, at A1.

5. *Id.*

6. *See* data collected by The Innocence Project, http://www.innocenceproject.org (last visited Mar. 18, 2007).

Courts and commentators increasingly recognize that juries have convicted many innocent people.[7] As is well-accepted, the causes of and blame for misconvictions are legion[8] and include mistaken eyewitness identification,[9] false confessions,[10] sleeping and incompetent defense lawyers,[11] lying witnesses,[12] and overzealous and misguided prosecutors.[13] What many do not realize, however, is that faulty science contributes to these misconvictions.

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7. *See, e.g.*, CHRISTIANSON, *supra* note 2, at 5 (referring to one study which claims that between 3 and 10 percent of all felony convictions are erroneous and another study which indicates that ten thousand innocent people are wrongly convicted every year).
8. *Id.* at 8 ("In most cases, it wouldn't be fair to point the finger solely at a single culprit—that is, police, prosecutors, defense attorneys, trial judges, juries, appellate courts, or legislators. Wrongful conviction is a team sport.")
9. *See* The Innocence Project, Eyewitness Misidentification, http://www.innocenceproject.org/understand/eyewitness-misidentification.php (last visited May 27, 2007) (noting 75 percent of wrongful convictions include eyewitness misidentification); *See also* Saul M. Kassin, *On the Psychology of Confessions:* Does *Innocence Put Innocents* at Risk?, 60 AM. PSYCHOLOGIST 215, 215 (Apr. 2005) ("[I]t is clear that eyewitness misidentification, found in nearly three quarters of [misconvictions], are the most common source of error. . . .").

   The problem of erroneous eyewitness identification is well studied and amply documented. For a compelling discussion about the errors of eyewitness identification and the need for expert testimony to inform the jury about such problems, see Michael R. Leippe, *The Case for Expert Testimony About Eyewitness Memory*, 1 PSYCHOL. PUB. POL'Y & L. 909 (1995).
10. Surprisingly, data collected from The Innocence Project indicate that over 25 percent of misconvictions involved some form of false confession. *See* The Innocence Project, False Confessions, http://www.innocenceproject.org/understand/False-Confessions.php (last visited Mar. 18, 2007); *See also* Gross et al., *supra* note 2, at 544 (stating that 15 percent of those wrongly convicted included a false confession). For a comprehensive discussion about and analysis of false confessions, see Steven A. Drizin & Richard A. Leo, *The Problem of False Confessions in the Post-DNA World*, 82 N.C. L. REV. 891 (2004) (analyzing 125 cases of exonerated defendants who confessed falsely), and Welsh S. White, *False Confessions and the Constitution: Safeguards Against Untrustworthy Confessions*, 32 HARV. C.R.-C.L. L. REV. 105, 110 (1997) (discussing the empirical evidence showing the prevalence of false confessions caused by standard interrogation techniques and suggesting "constitutional safeguards designed to reduce the government's creation and use of such confessions").
11. *See* ACHIEVING JUSTICE, *supra* note 2, at 79–91 (discussing the failures of defense counsel that contribute to misconvictions and providing suggestions to address those concerns); HUFF ET AL., *supra* note 2, at 76–77 (discussing defense counsel's role in creating misconvictions). Although defense lawyer negligence is clearly a factor in many misconvictions, it is beyond the scope of the Article. This factor is considered in depth, however, in a book the author is writing, JANE CAMPBELL MORIARTY, MISCONVICTIONS: WHEN LAW AND SCIENCE COLLIDE (forthcoming N.Y. Univ. Press 2008) (manuscript on file with author).
12. *See, e.g.*, Gross et al., *supra* note 2, at 542–44, (discussing the role that false accusation and perjury play in convicting innocent people).
13. *See* Ellen Yaroshefsky, *Wrongful Convictions: It Is Time to Take Prosecution Discipline Seriously*, 8 UDC/DCSL L. REV. 275 (2004) (discussing the frequency of prosecutorial misconduct in wrongful convictions); *See also* The Innocence Pro-

Frequently and surprisingly, misconvictions occur because of bad science, poor laboratory work, and outright fraud on the part of the experts. Professor Michael J. Saks remarked:

> If the criminal justice community and the public were startled to learn that numerous innocent people were convicted of serious crimes and sentenced to long terms of imprisonment and sometimes even to execution, they will be even more surprised to learn that forensic science has played a large part in those erroneous convictions.[14]

A recent article confirms this opinion, stating that "[i]n twenty-one of the more recent exonerations . . . the exonerated's initial trial included testimony from a forensic examiner that was later established to be imprecise or clearly mistaken."[15] Four of those twenty-one had been sentenced to death.[16]

Due in large part to the work of The Innocence Project at Cardozo Law School and other law and journalism schools around the country, numerous misconvicted defendants have been exonerated by DNA testing. As of May, 2007, 203 people have been exonerated by DNA testing.[17] Of the first 130 exonerations, three involved faulty DNA inclusions, and twenty-one involved microscopic hair comparisons.[18] A study of the original Innocence Project data published in *Science* reported that "erroneous forensic science expert testimony [was] the second most common contributing factor to wrongful convictions."[19]

Despite the Supreme Court's requirement that only reliable expert testimony be admitted,[20] unreliable expert forensic science testimony

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ject, Government Misconduct, http://www.innocenceproject.org/understand/Government-Misconduct.php (last visited Mar. 18, 2007) (noting the prevalence of prosecutorial misconduct in wrongful convictions).

14. Saks, *supra* note 3, at 423 (discussing the Innocence Project exonerations). Professor Bennett L. Gershman agrees. Gershman, *supra* note 3, at 18–19 ("Many, if not most, . . . wrongful convictions are attributable to scientific evidence presented by prosecutors as trustworthy, and relied on as such by juries, when in fact the evidence was erroneous or fraudulent.").
15. Craig M. Cooley, *Reforming the Forensic Science Community to Avert the Ultimate Injustice*, 15 STAN. L. & POL'Y REV. 381, 395–96 (2004) [hereinafter Cooley, *Reforming the Forensic Science Community*].
16. *Id.* at 396.
17. *See* Innocence Project, Preserving Justice, http://www.innocenceproject.org (last visited May 3, 2007).
18. *See* Innocence Project, Causes of Wrongful Conviction, http://www.innocenceproject.org/understand (last visited May 18, 2007).
19. Michael J. Saks & Jonathan J. Koehler, *The Coming Paradigm Shift in Forensic Identification Science*, 309 SCIENCE 892, 893 (2005). For a critique of that article and Saks and Koehler's response to that critique, see Rockne Harmon et al., *Questions About Forensic Science*, 311 SCIENCE 607–10 (2006).
20. *See* Kumho Tire Co. v. Carmichael, 526 U.S. 137, 141 (1999); Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 597 (1993) (providing that all expert testimony must "rest[ ] on a reliable foundation"). While *Daubert* applies only to federal courts, a majority of state courts have adopted a reliability standard to govern the admission of expert testimony. Moreover, many states that continue to use

has been introduced into evidence and innocent people have been wrongly convicted due, at least in part, to its admission. Testimony may be unreliable for several reasons, including: fraud and negligence in the laboratory; the failure to use blind testing procedures; the lack of meaningful standards to judge the validity of a given theory; inadequate or nonexistent proficiency testing; and inadequate or nonexistent databases from which to generate comparisons.

A. Scientists and Their Laboratories: A Multitude of Concerns

Several crime lab expert witnesses throughout the country have testified falsely in criminal cases in order to assist the prosecution in convicting a defendant.[21] After Professors Saks and Koehler examined The Innocence Project data, they concluded that "forensic scientists are the witnesses most likely to present misleading or fraudulent testimony."[22]

Fred Zain was a police chemist who testified fraudulently in both West Virginia and Texas.[23] As one commentator noted, "He had a formidable reputation as the serologist who could find (incriminating) results when no one else could."[24] The reason for this reputation, as it turned out, was Zain's willingness to lie, omit, and otherwise deceive factfinders about results in at least 130 cases.[25] A special investigation report stated:

> The acts of misconduct on the part of Zain included (1) overstating the strength of results; (2) overstating the frequency of genetic matches on individual pieces of evidence; (3) misreporting the frequency of genetic matches on multiple pieces of evidence; (4) reporting that multiple items had been tested, when only a single item had been tested; (5) reporting inconclusive results as conclusive; (6) repeatedly altering laboratory records; (7) grouping results to create the erroneous impression that genetic markers had been obtained from

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the so-called "general acceptance" standard have been influenced by *Daubert*'s reliability requirement and require greater proof of the trustworthiness of such evidence. Jane Campbell Moriarty & Michael J. Saks, *Forensic Science: Grand Goals, Tragic Flaws, and Judicial Gatekeeping*, 44 A.B.A. JUDGES' J., Fall 2005, at 24.

21. *See* Cooley, *Reforming the Forensic Science Community*, *supra* note 15, at 399–408 (discussing the various experts who have testified falsely for the prosecution); Paul C. Gianelli, Ake v. Oklahoma*: The Right to Expert Assistance in a Post-*Daubert*, Post-DNA World*, 89 CORNELL L. REV. 1305, 1318–20 (2004) (discussing widespread fraud that has occurred in criminal trials). *See generally* JANE CAMPBELL MORIARTY, 2 PSYCHOLOGICAL AND SCIENTIFIC EVIDENCE IN CRIMINAL TRIALS § 12:4 (West Supp. 2006) [hereinafter MORIARTY, SCIENTIFIC EVIDENCE] (discussing fraud by forensic scientists).
22. Saks & Koehler, *supra* note 19, at 893.
23. MORIARTY, SCIENTIFIC EVIDENCE, *supra* note 21, § 12:4, at 12-6.
24. William C. Thompson, *A Sociological Perspective on the Science of Forensic DNA Testing*, 30 U.C. DAVIS L. REV. 1113, 1115 (1997).
25. *See id.* at 1115–16.

> all samples tested; (8) failing to report conflicting results; (9) failing to conduct or to report conducting additional testing to resolve conflicting results; (10) implying a match with a suspect when testing supported only a match with the victim; and (11) reporting scientifically impossible or improbable results.[26]

These results were part of a "systematic practice" in which his superiors may have ignored or concealed complaints about his work.[27] The report further noted that the procedural deficiencies of the lab contributed to the problems.[28]

Zain, unfortunately, is not unique. Other investigations have discovered large-scale fraud by other forensic experts in New York, Texas, and Oklahoma, among other places.[29] FBI experts have provided testimony that is both dishonest[30] and erroneous.[31] According to a Justice Department report written about an FBI investigation, the FBI laboratory had a number of problems that "raised . . . questions about the competency, integrity and bias of the FBI laboratory" and its examiners.[32]

Recently, the FBI agreed to stop using bullet lead comparison, after a report by the National Academy of Sciences (NAS) concluded the technique was "seriously misleading."[33] The examiners who testified about that specialty claimed they were able to link boxes of bullets owned by the defendant with bullets found at the scene by comparing the trace elements in both.[34] Despite admitting that the manufacturing and distribution of bullets was too varied to testify about matches,

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26. *In re* W. Va. State Police Crime Lab., 438 S.E.2d 501, 516 (W. Va. 1993).
27. *See id.* at 511–16.
28. *Id.* at 517. The report describes the following lab shortcomings:

> (1) no written documentation of testing methodology; (2) no written quality assurance program; (3) no written internal or external auditing procedures; (4) no routine proficiency testing of laboratory technicians; (5) no technical review of work product; (6) no written documentation of instrument maintenance and calibration; (7) no written testing procedures manual; (8) failure to follow generally-accepted scientific testing standards with respect to certain tests; (9) inadequate record-keeping; and (10) failure to conduct collateral testing.

Id.

29. *See* Cooley, *Reforming the Forensic Science Community*, *supra* note 15, at 399–408. *See also* Maurice Possley et al., *Scandal Touches Even Elite Labs*, CHICAGO TRIBUNE, Oct. 21, 2004, at 1 (noting that problems ranging from negligence to deception have been discovered in at lease seventeen states).
30. *Id.* at 403.
31. *See* MORIARTY, SCIENTIFIC EVIDENCE, *supra* note 21, § 12:4 at 12-4 to 5 (discussing the FBI laboratory errors set forth in the 1997 Justice Department's Office of the Inspector General (OIG) report).
32. *Id.* at 12–7.
33. Charles Piller, *FBI Abandons Controversial Bullet-Matching Technique*, L.A. TIMES, Sept. 2, 2005, at A38. For a fuller discussion of the NAS panel report, see Moriarty & Saks, *supra* note 20, at 22–23.
34. Moriarty & Saks, *supra* note 20, at 22; Piller, *supra* note 33.

the FBI Laboratory director inexplicably stated, "We stand by the results of the reports we have already issued."[35]

An additional concern is that many crime labs lack standards, are not certified, and often operate in an entirely unregulated manner.[36] Where labs are certified, there are still concerns about how meaningful that process may be.[37] Many laboratories—including the FBI laboratory—fail or have failed to employ proper procedures, such as blind testing, that could reduce the potential for error.[38] In *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*,[39] the authors describe many observer effects that plague forensic science labs in general, including expectation bias, which illustrates that information provided before an observation can color the observation itself.[40] According to well-established psychological principles, if a forensic examiner is told that the questioned sample will likely match the exemplar, the examiner is more likely to find a match than an examiner who is not given such information.[41] Nonetheless, blind testing is not a mandatory requirement in many forensic laboratories, even though "[t]he simplest, most powerful, and most useful procedure to protect against the distorting effects of unstated assumptions, collateral information, and improper expectations and motivations is blind testing."[42]

A related laboratory problem is the lack of scientific culture in many forensic labs in America. In traditional scientific disciplines (as opposed to forensic science), where scientists are primarily Ph.D.s and graduate students, the culture emphasizes "methodological rigor,

35. *Id.* at 23 (citing Piller, *supra* note 33).
36. *See* Paul C. Giannelli, *The "Science" of Wrongful Convictions*, CRIM. JUST., Spring 2003, at 55 (noting that, except for the State of New York, there is no mandatory accreditation).
37. Roger Koppl, *How to Improve Forensic Science*, 20 EUR. J.L. & ECON. 255, 261 (2005) (questioning accreditation standards).
38. *See* Cooley, *Reforming the Forensic Science Community*, *supra* note 15, at 406–07.
39. D. Michael Risinger et. al., *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 CAL. L. REV. 1 (2002).
40. *Id.* at 13–15. This article describes a number of other problems, including confirmation bias, anchoring effects, role effects, conformity effects, and experimenter effects, all of which may be implicated in forensic testing. *Id.* at 12–21; *accord* Keith A. Findley & Michael S. Scott, *The Multiple Dimensions of Tunnel Vision in Criminal Cases*, 2006 WIS. L. REV. 291, 293 (describing how forensic scientists can be unwittingly influenced).
41. *See* Risinger et al., *supra* note 39, at 13. The authors describe how a pathologist, after being told she is looking at abnormal cells, might be more likely to perceive abnormal cells. *Id.*
42. *Id.* at 45. In a study of fingerprint examiners designed to test the effects of extraneous contextual information, researchers concluded that the examiners were vulnerable to the information. Indeed, two-thirds of the experts made inconsistent decisions. Itiel E. Dror & David Charlton, *Why Experts Make Errors*, 56 J. FORENSIC IDENTIFICATION 600, 610 (2006).

openness, and cautious interpretation of data."[43] However, "[i]n forensic science, 96% of positions are held by persons with bachelor's degrees (or less), 3% [hold] master's degrees, and 1% Ph.D.s."[44] Thus, forensic labs often lack this scientific culture, seeming to value the ends of the process far more than the means—a position at odds with science.[45]

A final concern about laboratories centers around those examiners who testify that their unique methods allow them to see what others cannot. Dr. Michael West, a dentist, testified that his special blue light was able to illuminate and compare marks that other examiners missed—not only bite-marks, but such things as tool-marks and shoeprints.[46] Physical anthropologist, Louise Robbins, Ph.D., said she was able to identify shoe and footprints using a grid format to identify multiple points of shape of the shoeprint within various categories to match it, *Cinderella-like* to the foot.[47]

While many of these laboratory problems are being addressed,[48] the problems are far from resolved.

B. Forensic Individualization

"Forensic individualization" claims to be able "to associate an item of evidence found at a crime scene with its unique source, to the exclusion of all others" in the world.[49] Courts routinely admit this type of

43. Saks & Koehler, *supra* note 19, at 893; *See also* Koppl, *supra* note 37, at 256 (discussing the potential unreliability of forensic science due to its failure to follow the scientific model of criticism, review, and reproduction).

44. Saks & Koehler, *supra* note 19, at 893.

45. *See* DAVID GOODSTEIN, *How Science Works*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 67, 74 (West Group 2d ed., 2000) ("[S]cience . . . is an arena in which ideas do battle, with observations and data the tools of combat."); Koppl, *supra* note 37, at 256.

46. As Professor Paul C. Giannelli discusses in his article, *The Abuse of Scientific Evidence in Criminal Cases: The Need for Independent Crime Laboratories*, 4 VA. J. SOC. POL'Y & L. 439, 453–57 (1997), forensic odontologist, Michael West, testified in numerous cases about his ability to compare not only bite-marks, but various other forms of visual forensic comparison evidence. Although unable to provide photographic evidence, West claimed that the use of his "blue light"—the so called "West Phenomenon"—allowed him to make such comparisons. *See id.* at 454 & n.88.

47. *See* ANDRE A. MOENSSENS ET AL., SCIENTIFIC EVIDENCE IN CIVIL AND CRIMINAL CASES § 17.11 at 1049–52 (4th ed. 1995); *accord* Giannelli, *supra* note 46, at 457–62.

48. *See* ACHIEVING JUSTICE, *supra* note 2, at 47–58 (discussing proposed changes to crime laboratories that would assist in reducing the likelihood of wrongful convictions); Margaret A. Berger, *The Impact of DNA Exonerations on the Criminal Justice System*, 34 J.L. MED. & ETHICS 320, 321–22 (2006) (discussing various groups that are attempting to improve the quality of crime laboratories).

49. Moriarty & Saks, *supra* note 20, at 17. In a recent federal case involving a comparison of cartridge cases, the expert claimed to be able to make the match to the firearm in question "to the exclusion of every other firearm in the world." United

evidence, which includes the comparison and "matching" of DNA, hair, handwriting, photographs of items with items, fingerprints, tool-marks, teeth-marks and shoeprints—generally without proof that its methodology meets the contemporary standard of scientific reliability.[50] With the exception of nuclear DNA testing, which rests on solid scientific and statistical ground, the individualization specialties have numerous foundational shortcomings. Indeed, "the data supporting the validity of these techniques, the safeguards against fraud or mistake, the training and supervision of the relevant personnel, and the existence and enforcement of sound, standardized procedures are shockingly deficient."[51]

Individualization rests on two principles: (1) that each fingerprint, footprint or handwriting is unique; and (2) that examiners can accurately make a conclusive match between known and unknown samples.[52] Little data supports either of these claims,[53] especially with respect to handwriting,[54] tool-marks,[55] bite-marks (forensic odontology),[56] shoeprint marks (forensic podiatry),[57] and hair comparison.[58]

States v. Green, 405 F. Supp. 2d 104, 108–09 (D. Mass. 2005). Such a conclusion was disallowed by the trial judge, who found such a conclusion to "stretch[ ] well beyond [the expert's] data and methodology." *Id.* at 109.

50. *See* Moriarty & Saks, *supra* note 20, at 24–26.

51. Andrew E. Taslitz, *Convicting the Guilty, Acquitting the Innocent: The ABA Takes a Stand*, CRIM. JUST., Winter 2005, at 27 (citing various critiques).

52. *See* Moriarty & Saks, *supra* note 20, at 18 (explaining individualization). In a recent case, a forensic document examiner testified he had a "90% confidence level" in the accuracy of his claimed match of handwriting. United States v. Smart, 135 Fed. App'x. 337, 339 n.1 (11th Cir. 2005) (citing the appellee's brief). However, such a number has no statistical basis in fact.

53. *See* Mark P. Denbeaux & D. Michael Risinger, Kumho Tire *and Expert Reliability: How the Question You Ask Gives the Answer You Get*, 34 SETON HALL L. REV. 15, 57 (2003) (discussing the lack of objective testing methodology with handwriting analysis, among other forensic comparison methodologies); Saks & Koehler, *supra* note 19, at 892.

54. John I. Thornton & Joseph L. Peterson, *The General Assumptions and Rationale of Forensic Identification*, *in* 4 MODERN SCIENTIFIC EVIDENCE § 31:42 at 58–61 (David L. Faigman et al. eds., 2006) (explaining why handwriting comparison does not meet the definition of a science and discussing some of its shortcomings as a technical skill). For further discussion of the shortcomings on handwriting comparison, see D. Michael Risinger & Michael J. Saks, *Science and Nonscience in the Courts:* Daubert *Meets Handwriting Identification Expertise*, 82 IOWA L. REV. 21 (1996).

55. *See* Adina Schwartz, *A Systemic Challenge to the Reliability and Admissibility of Firearms and Toolmark Identification*, 6 COLUM. SCI. & TECH. L. REV. 1 (2005) (explaining the various failures and shortcomings of firearm and tool-mark identification).

56. *See* Thornton & Peterson, *supra* note 54, § 31:45 at 64 (claiming that bite-mark comparison has low reliability and that "forensic odontologists have been more successful in convincing courts of the legitimacy of their opinions than they have been in convincing other forensic scientists"); *cf.* MOENSSENS ET AL., *supra* note 47, § 16.05, 974–75 (claiming there is now agreement among forensic odontolo-

Stretching the concept of individualization even further, some federal courts have allowed testimony by alleged experts in photographic comparisons, who testify that they can meaningfully compare photographs of items or persons with the actual item or person.[59]

Despite the claims of forensic examiners, there are numerous foundational weaknesses inherent in the individualization specialties—not the least of which is that there are "few scientists . . . [and] little science" involved.[60] Professor Saks has gone so far as to call these species of evidence "contenders for being the shoddiest science offered to the courts."[61] All individualization matches turn on purely subjective decision-making founded on experience-based knowledge, with no objective standards by which to determine either accuracy or error

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gists that bite-marks can be "vital evidence," but discussing the extensive factors that limit its utility, including the implications of biting into living tissue that changes, or the problems that changes in the victim's posture may cause).

57. *See, e.g.*, MOENSSENS ET AL., *supra* note 47, at 1049–52 (recognizing that courts have not scrutinized this type of testimony as carefully as they should have and discussing some of the more scandalous examiners in the field).

58. *See, e.g.*, Thornton & Peterson, *supra* note 54, § 31:37, at 48–49 (claiming that hair comparison which is used to *exclude* a suspect is "a rather good form of evidence," but that as *inclusive* evidence, it "is a miserable form of evidence"). In some places, crime laboratories are beginning to rely on mitochondrial DNA testing to replace visual hair comparison, which appears to be a step in the right direction, although some note that this type of DNA testing is still not fully legally accepted. *See, e.g.*, Benjamin Vetter, Comment, *Habeas, Section 1983, and Post-conviction Access to DNA Evidence*, 71 U. CHI. L. REV. 587, 589 n.5 (2004).

59. *See, e.g.*, United States v. McKreith, 140 F. App'x. 112, 114 (11th Cir. 2005). In *McKreith*, forensic analyst Richard Vorder Bruegge viewed surveillance photos of the crime and compared them with items of the defendant. He testified that the shirt worn by defendant "matched the class characteristics of the shirt worn by the bank robber" and that the defendant's black bag was "indistinguishable" from the one in the photos. *Id.* The analyst also opined that there were similarities in "the shape of the nose, mouth and chin" of the defendant and of the bank robber. The court upheld the district court's admission of the testimony, stating that "[t]he jury was free to accept or reject Vorder Bruegge's testimony" and that, in any event, any possible error was harmless. *Id.* at 116. Other courts have admitted such testimony as well. *See also* United States v. Martin, 46 F. App'x. 119, 122–23 (3d Cir. 2002) (noting that the defendant called Vorder Bruegge as a witness).

60. *See, e.g.*, Craig M. Cooley, *Forensic Science or Forgettable Science?*, 80 IND. L. J. 80, 81–82 (2005) (describing the myriad of shortcomings and noting the lack of science and scientists in forensic science).

61. Michael J. Saks, *Banishing* Ipse Dixit*: The Impact of* Kumho Tire *on Forensic Identification Science*, 57 WASH. & LEE L. REV. 879, 879 (2000).

rates.[62] Moreover, unlike DNA testing, no databases are used to extrapolate a meaningful interpretation of a match.[63]

The problems inherent with visual individualization go beyond the two principal problems and encompass a wealth of other concerns that are directly related to the accuracy of the process.

1. Questioning Uniqueness

Few dispute that fingerprints are unique (although such a claim cannot be proven)[64] but many dispute the uniqueness of hair, teeth marks, shoeprints, or weapon markings.[65] Despite lacking data to establish how rare (or common) hair, handwriting, and shoeprints are, examiners testify under oath that such prints, writings or markings are unique. The unanswered (and unanswerable) question in bite-mark cases is how possible is it that another set of teeth left the bite-mark in question? Forensic examiners do not have an answer to that question. Nonetheless, the jury is left with the impression that if the examiner declares a match, he has accurately identified the print, writing, or marking as unique to the perpetrator—a far more probative assertion than examiners can legitimately make.[66]

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62. Denbeaux & Risinger, *supra* note 53, at 57; *See also* Simon A. Cole, *More than Zero: Accounting for Error in Latent Fingerprint Identification*, 95 J. CRIM. L. & CRIMINOLOGY 985, 993–94 (2005) [hereinafter Cole, *More Than Zero*] (noting that fingerprint examiners testify a finding of individualization is a matter of sufficiency, which is simply "the examiner's determination that adequate unique details of the friction skin source area are revealed in the impression").

    For arguments about the theoretical problem of experience-based knowledge not subject to objective standards, see Jane Campbell Moriarty, *Wonders of the Invisible World: Prosecutorial Syndrome and Profile Evidence in the Salem Witchcraft Trials*, 26 VT. L. REV. 43, 84 (2001) [hereinafter Moriarty, *Wonders of the Invisible World*] (arguing in favor of an objective standard to judge experiential-based knowledge), and Joseph Sanders, Kumho *and How We Know*, 64 LAW & CONTEMP. PROBS. 373, 404–09 (2001) (creating a compelling argument that an expert must be able to describe "objectively the way in which the hypothesis at issue can be tested and how the expert put the hypothesis to the test").

63. *See, e.g.*, Schwartz, *supra* note 55, at 8 (explaining that the database for firearms is "radically incomplete" and that no databases exist for any other types of tool-marks).

64. *See* Thornton & Peterson, *supra* note 54, § 31:40 at 54–58 (claiming that, to date, there has been no duplication of exact ridge matches).

65. *See, e.g.*, *id.* § 31:37 at 48 ("The most that can be said about a hair is that it is consistent with having originated from a particular person, but that it would also be consistent with the hair of numerous other people."); William A. Tobin & William C. Thompson, *Evaluating and Challenging Forensic Identification Evidence*, THE CHAMPION, July 2006, at 12, 17 (noting the lack of a scientific basis for the uniqueness of bite-marks and tool-marks, among other forensic science evidence).

66. Since there is no database for various individualization specialties, no statistics can be generated to create probabilities—a process employed with DNA evidence. For an explanation of DNA comparison and probability issues, see David H. Kaye & George F. Sensabaugh, Jr., *Reference Guide on DNA Evidence*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 485, 524–48 (West Group 2d ed., 2000).

2. Questioning the Meaning of a Match

Although examiners in many European nations require a range between eight and sixteen points to declare a fingerprint match,[67] there is no scientifically premised source to support that choice of numbers. Forensic examiners in the United States, however, use neither a minimum nor a standard number of points of comparison by which to declare a match of any type of forensic individualization. Rather, the examiner declares a match when she is satisfied, using the so-called ACE-V method: an acronym for analyze, compare, evaluate, and verify.[68] What this method means, however, is that the examiner looks at a sample, compares it to a known sample, and then determines whether they appear to match. The examiner then has another examiner or a supervisor review the conclusions—the verification. The verification is not generally an independent test where the second examiner does not know what the first examiner's result was.[69]

According to the Scientific Working Group for Friction Ridge Analysis, Study and Technology (a group established in 1997 and sponsored by the F.B.I.), a conclusion is justified when the examiner makes a "determination that adequate unique details of the friction skin source area are revealed in the impression"—an obviously unreviewable subjective standard.[70] In fact, one of the government's leading fingerprint examiners has acknowledged that the examiners' opinions are "very subjective."[71] Equally troubling is the significant amount of

67. Simon A. Cole, *Grandfathering Evidence: Fingerprint Admissibility Rulings From* Jennings *to* Llera Plaza *and Back Again*, 41 AM. CRIM. L. REV. 1189, 1260 n.315 (2004), (citing 28 FINGERPRINT WHORLD 19 (2002)). Great Britain no longer requires a minimum number of points and has adopted the U.S. standard. *Id.* at 1260; *see also* Commonwealth v. Patterson, 840 N.E.2d 12, 17 n.5 (Mass. 2005) (noting the change by Great Britain).

68. *See* United States v. Mahone, 328 F. Supp. 2d 77, 90 (D. Me. 2004) (noting the footprint examiner claimed to be unsure whether the ACE-V verification was "blind"); Cole, *More Than Zero*, *supra* note 62, at 994 (noting use of the ACE-V method by latent fingerprint examiners).

69. Cole, *More Than Zero*, *supra* note 62, at 994. However, after Brandon Mayfield was wrongfully accused of being involved with the Madrid bombing, the FBI has claimed it would use blind verification for select cases. *Id.* at 985–87, (citing Robert B. Stacey, *A Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, 54 J. FORENSIC IDENTIFICATION, 706, 715 (2004)).

70. Cole, *More than Zero*, *supra* note 62, at 994, (citing Scientific Working Group for Friction Ridge Analysis, Study and Technology [hereinafter SWGFAST], *Friction Ridge Examination Methodology for Latent Print Examiners* § 1.5 (SWGFAST, version 1.01, 2002), *available at* http://www.swgfast.org/ [hereinafter SWGFAST, *Methodology*].

71. Robert Epstein, *Fingerprints Meet* Daubert*: The Myth of Fingerprint "Science" is Revealed*, 75 S. CAL. L. REV. 605, 636 (2002), (quoting David R. Ashbaugh, Guest Editorial, *The Premises of Friction Ridge Identification, Clarity, and the Identification Process*, 44 J. FORENSIC IDENTIFICATION 499, 511 (1994)).

disagreement among examiners about how many common ridge characteristics must be present to declare a match.[72]

Another concern with fingerprint comparison is that it is not a comparison of two rolled prints from a carefully prepared sample, but a comparison of a rolled print to a so-called latent print—whatever is found in the field. These latent prints are often smudged, partial prints that have far less clear detail than a rolled print. Thus, false claims of a match in the actual day-to-day work of fingerprint comparison are always a possibility; the concerns are not simply theoretical or academic. For example, a small, smudged partial latent fingerprint might be positively matched to a rolled print despite a lack of standards by which to judge that conclusion and no minimum number of points of comparison to declare a match. Even if several points match, would the rest of the fingerprint (not present on the latent print) prove exculpatory?

Other forms of individualization testimony are supported by an even thinner reed, since handwriting, hair comparison, bite-mark, tool-mark, and shoeprint examiners have never had a standard by which to declare a match—again, the examiner simply gives his impressionistic estimate that the samples in question match, generally using the ACE-V method.[73]

3. *Proficiency Testing and Error Rates*

Although visual individualization examiners often claim a zero error rate,[74] there is neither theoretical nor scientific support for such a proposition.[75] In fact, in the area of fingerprinting—considered by law enforcement and the public to be the gold standard for visual individualization—the recent high-profile error wrongfully inculpating American Brandon Mayfield as one of the Madrid train bombers certainly deflates the long-maintained boast that fingerprint comparison is infallible. Similar errors have occurred throughout the past decade.[76] Indeed, how could such an assertion of infallibility be main-

72. *Id.* at 610.

73. For a contemporary analysis claiming the ACE-V procedure meets reliability standards, see, for example, *Mahone*, 328 F. Supp. 2d at 87–91 (reviewing the ACE-V methodology).

74. Cole, *More than Zero*, *supra* note 62, at 987, 1034 (citing FEDERAL BUREAU OF INVESTIGATION, U.S. DEPT. OF JUSTICE, THE SCIENCE OF FINGERPRINTS, at iv (1985) ("Of all the methods of identification, fingerprinting alone has proved to be both infallible and feasible.").

75. *Id. passim* (discussing the issue of error and error rates throughout the article); *See also* Edward J. Imwinkelried, Forward, *International Perspective on Scientific Evidence*, 30 U.C. DAVIS L. REV. 941, 944 (1997), (remarking that there are "a stack of studies documenting the margin of error in scientific analysis").

76. *See* Cole, *More Than Zero*, *supra* note 62, at 97–1016 (discussing various cases of misattributed fingerprints).

tained? While any comparison process might be competent, the individuals performing the comparison are still human and still fallible. They are, like the rest of us, "clay up to their eyebrows."[77] Some of the individualization areas, such as fingerprinting, claim that the so-called "methodological" error rate is zero, but concede the possibility of human error—a distinction critics argue is both irrelevant and misleading to the question of accuracy.[78]

Another shortcoming the forensic individualization specialties share, however, is that few of them have calculated a meaningful error rate. Thus, the very real danger they pose is that no one is really certain about the ability of the examiners to do what they say they can do as accurately as they claim they can do it.

The minimal amount of proficiency testing which is completed in forensic individualization specialties is not encouraging. As Judge Pollak admitted in the contentious and oft-discussed case of *United States v. Llera Plaza*, the defense raised "real questions about the adequacy of the proficiency tests taken annually by certified FBI examiners."[79] Moreover, the court concluded, "the tests can be of little assistance in providing the test makers with a discriminating measure of the relative competence of the test takers."[80] Nonetheless, the court determined the examiners could testify and provide conclusions about fingerprint comparison.[81]

The small body of evidence concerning proficiency in other forms of forensic individualization is also discouraging. In their 2005 *Science* article, Saks and Koehler collected proficiency test error rates and noted error rates as high as 64% for bite-mark comparison, a 40% error rate for handwriting comparison, and a 12% error rate for microscopic hair comparison.[82]

4. The Circular Reasoning Problem

As mainstream science demands and the Supreme Court recognizes, one of the hallmarks of science is that it generates results that

77. Imwinkelried, *supra* note 75, at 942–43. Craig M. Cooley, a lawyer with a master's degree in forensic science, notes that despite repeated claims of infallibility, "numerous studies indicat[e] that the error rate in the forensic sciences is far from zero." Cooley, *Reforming the Forensic Science Community*, *supra* note 15, at 381, 393 (citing various studies on proficiency testing error rates).

78. Cole, *More Than Zero*, *supra* note 62, at 1034–42.

79. United States v. Llera Plaza, 188 F. Supp. 2d 549, 565 (E.D. Pa. 2002).

80. *Id.* at 565.

81. *Id.* at 571.

82. Saks & Koehler, *supra* note 19, at 895; *see also* Cooley, *Reforming the Forensic Science Community*, *supra* note 15, at 393–94 (discussing error rate studies).

can be tested by others.[83] Thus, the preference for controlled, double-blind studies, the demanding system of blind peer-review, and the requirement that data be reproducible, collectively point to the importance of *independent* reviewers testing the quality of the scientific endeavor.[84] By comparison, forensic science operates in a self-contained chamber, where its own examiners are the ones to vouch for the correctness of the underlying theory, as well as the accuracy, quality, and the general acceptance of their professions.[85]

One possible reason the circular reasoning problem has infected forensic individualization specialties can be traced to the *Frye* general acceptance standard, which governed the admissibility of novel scientific evidence in many states before *Daubert*.[86] *Frye* required that "the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs."[87] Thus, "the thing"—for example, the belief that handwriting samples can be meaningfully and conclusively compared and identified—must be generally accepted by the "particular field to which it belongs." The field, of course, is handwriting comparison. So, to meet this standard, those practicing in the field can simply testify that handwriting comparison is generally accepted.[88] As one court noted, the relevant community "is devoid of financially disinterested parties, such as academics."[89] The relevant community generally consists of those very individuals whose livelihood depends on the continued general acceptance of such a forensic specialty. Nonetheless, courts do not appear to be troubled by this circularity. The Supreme Judicial Court of Massachusetts recently noted in a fingerprint examination case that the judge "properly ensured" that the relevant community of those judging latent fingerprint methodology was broad enough to include "some practitioners who acknowledge flaws in the methodology" and to tolerate "some, albeit, limited room for dis-

83. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 593 (1993) (noting the importance in scientific method of generating hypotheses and testing them); GOODSTEIN, *supra* note 45, at 73–75.

84. GOODSTEIN, *supra* note 45, at 74–75.

85. See Koppl, *supra* note 37, at 257–59, for a discussion of this problem.

86. Frye v. United States, 293 F. 1013 (D.C. Cir. 1923). Professor Schwartz, however, provides a compelling critique of *Daubert* and an argument in favor of a modified *Frye* standard in Adina Schwartz, *A "Dogma of Empiricism" Revisited:* Daubert v. Merrell Dow Pharmaceuticals, Inc. *and the Need to Resurrect The Philosophical Insight of* Frye v. United States, 10 HARV. J.L. & TECH. 149 (1997).

87. *Frye*, 293 F. at 1014.

88. With the exception of polygraph and voice spectrometry, few thought to challenge the general acceptance of most expert testimony pre-*Daubert*, except for DNA evidence, which was subject to numerous challenges. *See, e.g.*, United States v. Bonds, 18 F.3d 1327 (6th Cir. 1994); People v. Castro, 545 N.Y.S.2d 985 (1989) (determining that DNA profiling met general acceptance standards).

89. United States v. Starzecpyzel, 880 F. Supp. 1027, 1038 (S.D.N.Y. 1995).

sent."[90] However, the community consisted primarily of those who compare fingerprints for a living. Moreover, the court did not understand the implications of noting that the community allowed only "limited room for dissent." Surely the mark of a well-grounded science is its willingness to accept and respond to robust critique and dissent.[91] Although *Daubert* has replaced the *Frye* standard in many state jurisdictions, *Daubert's* inquiry also often includes an analysis of the general acceptance of the proposed evidence.[92]

In the 1830s and 1840s, phrenology—or the study of brain functions as manifested by cranial features—was in full swing as a scientific endeavor, with conferences devoted to its study and its own scholarly publication—the *American Phrenological Journal*.[93] One of the inventors of the system of phrenology was Dr. Franz Joseph Gall, who attempted to identify twenty-seven human faculties that could be identified by various cranial manifestations.[94] Gall's conclusions emanated from "scientific observation of countless samples"[95] and among the applications for phrenology was its believed utility in criminology.[96] At the time, if one asked a phrenologist whether phrenology was good science, the answer would be undoubtedly "yes." Today, few people would equate phrenology with good science.[97] Yet, phrenology shares an important trait with forensic individualization evidence: conclusions are not based upon independent testing but upon "scientific observations of countless samples." Both are experience-based conclusions that rest on the foundation that: (1) the science is valid because of extensive observations; (2) those skilled in the science can do it properly; and (3) the underlying theory is valid because of the care used by the practitioners. The circular reasoning problem, however, is far more easy to spot in the case of phrenology than it is with other forms of forensic individualization, as evidenced by a 2005 Supreme Judicial Court of Massachusetts decision noting the ACE-V

90. Commonwealth v. Patterson, 840 N.E.2d 12, 25 (Mass. 2005). Although Massachusetts uses a *Daubert*-style reliability test, they have noted that "'general acceptance in the relevant . . . community will continue to be the significant, and often the only, issue.'" *Id.* at 23 (citations omitted).

91. *See* Cooley, *Reforming the Forensic Science Community*, *supra* note 15, at 392, (stating that "science thrives by detecting errors and shortcomings of asserted hypotheses").

92. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 594 (1993) ("'General acceptance' can yet have a bearing on the inquiry. . . . Widespread acceptance can be an important factor. . . .").

93. Pierre Schlag, *Commentary Law and Phrenology*, 110 HARV. L. REV. 877, 877 (1997).

94. *Id.* at 878, 880.

95. *Id.* at 880.

96. *Id.* at 878.

97. However, given the proliferation and popularity of such pseudosciences as new-age crystal healing and horoscopes, some might disagree with the stated proposition.

method for comparing fingerprints "defies easy testing because it does not require a minimum number of similarities, but rather operates on a subjective sliding scale."[98] That is to say, "I know a match when I see one."

It is not only the *Frye* jurisdictions that have an inherent circular logic problem. In *Kumho Tire*, the majority decides that the *Daubert* reliability standard and gatekeeping obligation apply to all forms of expert testimony, not simply scientific expert evidence. The objective of such gatekeeping, the court reasons, is to ensure the reliability and relevancy of such evidence. Thus, the expert, "whether basing testimony upon professional studies or personal experience, [must] employ[] in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field."[99] Interpreting this phrase literally would permit virtually any substandard expert evidence to be admissible so long as the courtroom testimony is of equal "intellectual rigor" to the practice in the field. Indeed, the language would seem to give the particularly shoddy expert testimony easy entry into the courts—as has proven prophetic in the case of prosecutorial forensic science.

In civil cases, many federal courts are loath to admit what they consider insufficiently well-grounded expert testimony.[100] For example, courts have declined to admit expert medical testimony that a defendant's product caused plaintiffs' alleged multiple chemical sensitivity.[101] What these courts claim to require is some independent proof that such a theory has a solid basis in a well-studied and accepted *science*.

Yet in criminal cases, particularly with the individualization specialties, courts have not required any such independent proof from

98. Commonwealth v. Patterson, 840 N.E.2d 12, 20 (Mass. 2005).

99. Kumho Tire Co. v. Carmichael, 526 U.S. 137, 152 (1999).

100. *See, e.g.*, McLain v. Metabolife Int'l, 401 F.3d 1233, 1239–52 (11th Cir. 2005) (discussing an expert who substituted his own opinion for scientific proof that plaintiff's use of defendant's supplements caused plaintiff's strokes and heart attack); Norris v. Baxter Healthcare Corp., 397 F.3d 878, 886 (10th Cir. 2005) (describing plaintiff's experts' opinions that silicone breast implants caused autoimmune diseases as not reliably grounded on existing data). In both these cases (and others), courts have determined that the data is connected to the opinion only by the "*ipse dixit*" of the expert, which, as the Supreme Court said in *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), may be insufficient for admissibility. "[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." *Id.* at 146.

101. *See, e.g.*, Alder v. Bayer Corp., AGFA Div., 61 P.3d 1068, 1081 (Utah 2002); Bradley v. Brown, 42 F.3d 434, 438 (7th Cir. 1994); Summers v. Mo. Pac. R.R. Sys., 132 F.3d 599, 604 (10th Cir. 1997) (all holding expert testimony that defendant's product caused multiple chemical sensitivity in plaintiffs was rightly excluded under *Daubert*'s reliability standard).

prosecutors and have allowed in virtually all forms of their expert evidence.[102] Often, the sole verification for individualization is the examiner's claims that based upon their experience, they know a match when they see one.[103] That is a far cry from the United States Supreme Court's admonition in *Kumho Tire Co. v. Carmichael*,[104] that *all* expert evidence must "rest[ ] on a reliable foundation,"[105] and it is a great deal closer to phrenology's claims of accuracy. Moreover, the experience-based proof of reliability comes nowhere near the court's admonition that "a trial court *should* consider the specific factors identified in *Daubert* where they are reasonable measures of the reliability of expert testimony."[106]

Despite the glaring shortcomings of forensic individualization specialties and the mandate that federal trial courts act as gatekeepers to exclude unreliable evidence,[107] courts have been steadfast in continuing to admit such testimony.[108] Although a handful of courts have at least prevented some of these experts from testifying about a conclusion,[109] the clear trend is in favor of admission of such evidence.

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102. Moriarty & Saks, *supra* note 20, at 28. Defendants have had more difficulty in attempts to have similar types of evidence admitted. *See, e.g.*, United States v. Frazier, 387 F.3d 1244, 1265 (11th Cir. 2004) (finding the trial court did not abuse its discretion in limiting the testimony of a qualified forensic expert where it found an "absence of a sufficiently verifiable, quantitative basis" for the opinion). The subject of defense attempts to introduce expert evidence is also beyond the scope of this Article but will be addressed in the author's forthcoming book mentioned in note 11, *supra*.

103. *See, e.g.*, Thornton & Peterson, *supra* note 54, at § 24-5.5 (explaining the dangers of forensic experts claiming that their conclusion is based on "years of experience"). *See also* Moriarty, *Wonders of the Invisible World*, *supra* note 62, at 84–86 (discussing the problems of experiential-based conclusions).

104. *Kumho Tire Co.*, 526 U.S. at 137.

105. *Id.* at 141 (quoting Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 597 (1993)). In *Daubert*, the Supreme Court suggested that five factors (testing, error rate, peer review, maintenance of standards and controls, and general acceptance) might be helpful to determining whether scientific evidence is reliable. *Daubert*, 509 U.S. at 593–94. The *Kumho Tire* decision extended the reliability requirement to all expert evidence. *Kumho Tire Co.*, 526 U.S. at 141.

106. *Kumho Tire Co.*, 526 U.S. at 152 (emphasis added).

107. *Daubert*, 509 U.S. at 597.

108. See, for example, United States v. Crisp, 324 F.3d 261 (4th Cir. 2003) and United States v. Mooney, 315 F.3d 54 (1st Cir. 2002), each upholding the trial court's decision that expert testimony regarding handwriting comparisons and conclusions of authorship met *Daubert*'s reliability standard. Other examples include, United States v. Mitchell, 365 F.3d 215 (3d Cir. 2004), United States v. George, 363 F.3d 666 (7th Cir. 2004), United States v. Crisp, 324 F.3d 261 (4th Cir. 2003), and United States v. Havvard, 260 F.3d 597 (7th Cir. 2001), each finding that fingerprint comparisons met *Daubert*'s reliability requirements, and Bryan v. State, 935 P.2d 338 (Okla. Crim. App. Ct. 1997), affirming the admission of testimony that hair samples were microscopically consistent.

109. *See* United States v. Green, 405 F. Supp. 2d 104 (D. Mass. 2005) (limiting expert testimony about tool-marks to points of comparison, but disallowing testimony

III. PROSECUTORIAL ETHICS

A. Prosecutorial Goals and Obligations

What are the proper goals and ends of prosecution? Arguably, proper prosecutions determine truth, convict the guilty, exonerate the innocent, reaffirm the justness of our justice system, and aid in the preservation of the common tranquility by using civilized methods to punish lawbreakers.[110] The prosecution of citizens in this country has been exceedingly successful, if one measures success by the number of convicts.[111] There are now more than two million people in jail, leading commentators to refer to the rise of the "prison-industrial complex" and to write disturbingly about the effects of such a punitive system.[112]

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about conclusions); United States v. Hines, 55 F. Supp. 2d 62 (D. Mass. 1999) (limiting handwriting comparison conclusion); United States v. Santillan, No. CR-96-40169, 1999 WL 1201765 (N.D. Cal. Dec. 3, 1999); Pre-Trial Transcript of United States v. McVeigh, No. 96-CR-68, 1997 WL 47724 (D. Colo. Feb. 5, 1997).

110. "One hopefully rather uncontroversial goal [of the Justice Department] is that of prosecuting only guilty people, convicting them, and doing so in accordance with law (defined broadly)." Daniel Richman, *Prosecutors and Their Agents, Agents and Their Prosecutors*, 103 COLUM. L. REV. 749, 794 (2003). Professor Richman also urges prosecutors to proceed "with a degree of moderation." *Id.* Professor Zacharias also notes that in the adversarial system, "[f]airness and respect for client individuality play an equal part, even though full assertion of client rights may interfere with truth-seeking." Fred A. Zacharias, *Structuring the Ethics of Prosecutorial Trial Practice: Can Prosecutors Do Justice?*, 44 VAND. L. REV. 45, 56 (1991).

111. "Success" may be an inapt term, in light of the unequal and horrific effect such prosecutions have had on the poor and minorities. *See* Abbe Smith, *Can You Be a Good Person and a Good Prosecutor?*, 14 GEO. J. LEGAL ETHICS 355, 363–75 (2001) (discussing the impact of prosecutions on impoverished and African American citizens); DAVID COLE, NO EQUAL JUSTICE: RACE AND CLASS IN THE AMERICAN CRIMINAL JUSTICE SYSTEM 133–46 (The New Press 1999) (describing with detailed statistics the unequal arrest, incarceration, and death penalty rates for African Americans as compared with Caucasians); J. Stephen J. Fortunato, Jr., *Judges, Racism, and the Problem of Actual Innocence*, 57 ME. L. REV. 481 (2005) (discussing the "systemic racism" that permeates the criminal justice system).

In an opinion excoriating the Sentencing Guidelines and the abuse of prosecutorial discretion, Chief Judge William G. Young of the District of Massachusetts, writes:

> "[T]he Department [of Justice] is so addicted to plea bargaining to leverage its law enforcement resources to an overwhelming conviction rate that the focus of our entire criminal justice system has shifted far away from trials and juries and adjudication to a massive system of sentence bargaining that is heavily rigged against the accused citizen."

United States v. Green, 346 F. Supp. 2d 259, 265 (D. Mass. 2004), *decision vacated in part on other grounds and remanded*, United States v. Yeje-Cabrera, 430 F.3d 1 (1st Cir. 2005), *vacated and remanded by* United States v. Pacheco, 434 F.3d 106 (1st Cir. 2006).

112. *See* Smith, *supra* note 111, at 363–65 (citing THE REAL WAR ON CRIME: THE REPORT OF THE NATIONAL CRIMINAL JUSTICE COMMISSION 93–94 (Stephen R. Donziger ed., 1996)). For a compelling reading on the subject, in addition to Abbe

With rising conviction numbers has come the discovery of increasing numbers of persons wrongfully convicted. Indeed, as a comprehensive review of exonerations concludes, "[a]ny plausible guess at the total number of [misconvictions] . . . in the last fifteen years must be in the thousands, perhaps tens of thousands."[113] Despite the rise in the number of prosecutions, the jurisprudential belief persists that to whom much power is given in prosecution, much is expected. Prosecutors, unlike other advocates, have a two-fold obligation to vigorously prosecute and to see that justice is done.[114] These prosecutorial duties, while often synchronistic and complementary, are occasionally at cross-purposes. For example, a prosecutor must disclose evidence that may mitigate the degree of guilt, although she honestly believes the defendant is guilty of the more serious degree of the crime.[115]

A potential conflict also arises when the prosecution uses expert testimony that may be less than reliable—such as conclusions about hair comparison—to help convict a person the prosecutor honestly believes is guilty. The conundrum is whether justice is served when a prosecutor decides not to use the questionable expert testimony or whether justice is served when she does.

The prosecutorial goals of "seeking justice," "doing justice," protecting the innocent, and convicting the guilty, each have a long and well-accepted basis in tradition.[116] The prosecutor's "duty to seek justice,"

Smith and David Coles' writing, see David Rudovsky, *Law Enforcement By Stereotypes and Serendipity: Racial Profiling and Stops and Searches without Cause*, 3 U. PA. J. CONST. L. 296 (2001); *accord* United States v. Green, 346 F. Supp. 2d at 266 (noting that if incarceration rates remain the same, 6.6% of U.S. residents born in 2001 will go to prison at some time in their life and that a disproportionate number will be African American or Hispanic American).

113. Gross, *supra* note 2, at 551.

114. *See generally* Berger v. United States, 295 U.S. 78, 88 (1935) (noting that a prosecutor's obligation is not "that it shall win a case, but that justice shall be done").

115. As a matter of substantive criminal procedure and ethical obligation, a prosecutor must disclose to the defense evidence that tends to exculpate the defendant or mitigate the degree of guilt. *See generally* Brady v. Maryland, 373 U.S. 83 (1963); United States v. Bagley, 473 U.S. 667 (1985); MODEL RULES OF PROF'L CONDUCT R. 3.8(d) (2007) ("[A prosecutor shall] make timely disclosure to the defense of all evidence or information known to the prosecutor that tends to negate the guilt of the accused or mitigates the offense, and, in connection with sentencing, disclose to the defense and to the tribunal all unprivileged mitigating information known to the prosecutor. . . ."); MODEL CODE OF PROF'L RESPONSIBILITY DR 7-103(B) (1983) ("A public prosecutor . . . shall make timely disclosure to counsel for the defendant, or to the defendant if he has not counsel, of the existence of evidence, known to the prosecutor . . . that tends to negate the guilt of the accused, mitigate the degree of the offense, or reduce the punishment.").

116. The morality of protecting the innocent in criminal trials in this country was recognized as far back as the Salem Witchcraft Trials of 1692, by the Rev. Increase Mather, who helped bring the trials to an end when he wrote, "It were better that Ten suspected Witches should escape, than that one Innocent Person should be Condemned." Moriarty, *Wonders of the Invisible* World, *supra* note 62, at 43 (cit-

is a standard traceable as far back as George Sharwood's oft-cited 1854 "Essay on Professional Ethics"[117] and continues to be the current standard, suggesting a quasi-judicial aspect.[118] The Supreme Court has embraced the standard as well, notably in *Berger v. United States*:

> The [prosecutor] is the representative not of an ordinary party to a controversy, but of a sovereignty whose obligation to govern impartially is as compelling as its obligation to govern at all; and whose interest, therefore, in a criminal prosecution is not that it shall win a case, but that justice shall be done. As such, he is in a peculiar and very definite sense the servant of the law, the twofold aim of which is that guilt shall not escape or innocence suffer. He may prosecute with earnestness and vigor—indeed, he should do so. But, while he may strike hard blows, he is not at liberty to strike foul ones. It is as much his duty to refrain from improper methods calculated to produce a wrongful conviction as it is to use every legitimate means to bring about a just one.[119]

This unique and special role of the prosecutor is an accepted norm embedded in the *ABA Model Code of Professional Responsibility*,[120] the *ABA Model Rules of Professional Conduct*,[121] the *ABA Standards Relating to the Administration of Criminal Justice*,[122] and numerous state ethics codes.[123] Moreover, case law and ethics codes support the free exercise of prosecutorial discretion in various decisions including

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ing INCREASE MATHER, CASES OF CONSCIENCE CONCERNING EVIL SPIRITS PERSONATING MEN 283 (1693)). *See also* 4 WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND 358 (1769) ("It is better that ten guilty persons escape, than that one innocent suffer."). *See* Coffin v. United States, 156 U.S. 432, 456 (1895) (quoting Blackstone).

117. *See* Bruce Green, *Why Should Prosecutors "Seek* Justice?", 26 FORDHAM URB. L.J. 607, 612 (1999) [hereinafter Green, *Why Should Prosecutors "Seek Justice?"*] (citing J. GEORGE SHARSWOOD, AN ESSAY ON PROFESSIONAL ETHICS (F.B. Rothman 5th ed. 1993) (1854)).

118. *See, e.g.*, Roberta K. Flowers, *What You See Is What You Get: Applying the Appearance of Impropriety Standard to Prosecutors*, 63 MO. L. REV. 699, 728–32 (1998) (discussing the quasi-judicial role of prosecutors and collecting commentary on that point).

119. *Berger*, 295 U.S. at 88.

120. MODEL CODE OF PROF'L RESPONSIBILITY EC 7-13 (1983) ("The responsibility of a public prosecutor differs from that of the usual advocate; his duty is to seek justice, not merely to convict.").

121. MODEL RULES OF PROF'L CONDUCT R. 3.8, cmt. 1 (2007) ("A prosecutor has the responsibility of a minister of justice and not simply that of an advocate. This responsibility carries with it specific obligations to see that the defendant is accorded procedural justice and that guilt is decided upon the basis of sufficient evidence.").

122. ABA STANDARDS FOR CRIMINAL JUSTICE: PROSECUTION AND DEFENSE FUNCTION, Standard 3-1.2(c) (3d ed. 1993) ("The duty of the prosecutor is to seek justice, not merely to convict.").

123. *See, e.g.*, 42 Pa. C.S. R. 3.8(d); ILL. SUP. CT. R. OF PROF'L. CONDUCT R 3.8(c); OHIO CODE OF PROF'L RESPONSIBILITY DR 7-103.

charging, plea bargaining, dismissing cases, the method of trying cases, and whether to appeal.[124]

In reality, however, protecting the innocent from conviction does not stand on equal footing with convicting the guilty—it is doubtful that any elected prosecutor campaigned on the notion of cases he did not prosecute.[125] Similarly, those prosecutors who decline to prosecute because of doubts about guilt are perhaps not as likely to succeed as those who harbor few doubts. Prosecutors who obtain "the highest conviction rates (and, thus, reputations as the best performers) stand the greatest chance for advancement internally."[126]

To date, the legal system and commentators have paid little attention to prosecutorial discretion in the use of unreliable expert testimony—despite mounting evidence that misconvictions have been based upon unreliable expert testimony. While the *ABA Model Rules of Professional Conduct* prohibit the use of evidence the lawyer knows to be false,[127] it says nothing about the use of evidence the lawyer knows to be unreliable—which many would argue is a different standard and a decision prosecutors can simply defer to judges.[128] This

124. For example, the *ABA Standards For Criminal Justice: Prosecution and Defense Function*, provide various places where a prosecutor may exercise discretion in seeking non-criminal disposition and in deciding what to charge. *See* ABA STANDARDS FOR CRIMINAL JUSTICE: PROSECUTION AND DEFENSE FUNCTION, Standard 3-3.8 to 3-3.9 (3d ed. 1993). *See also* Leslie C. Griffin, *The Prudent Prosecutor*, 14 GEO. J. LEGAL ETHICS 259, 261 (2001) (Grifin argues in favor of a "prudence" standard, urging prosecutors to exercise good judgment in the discretionary component of their practice and ethics. She posits that the Supreme Court's "prudent prosecutor" standard discussed in *United States v. Agurs*, 427 U.S. 97 (1976) encourages prosecutors to be cautious, careful, and exercise good judgment, largely because of the discretionary nature of their job.).

125. In his article, *System Failure*, Erik Luna notes that neither trial-level prosecutors nor their supervisors receive any benefit from prosecutions, dismissals, and acquittals. Rather higher salaries, promotions, and re-elections depend in part on rates of successful prosecutions. Erik Luna, *System Failure*, 42 AM. CRIM. L. REV. 1201, 1213 (2005).

126. Daniel S. Medwed, *The Zeal Deal: Prosecutorial Resistance to Post-Conviction Claims of Innocence*, 84 B.U. L. REV. 125, 134–35 (2004).

127. MODEL RULES OF PROF'L CONDUCT R. 3.3(a)(3) (2007) (provides that "[a] lawyer shall not knowingly offer evidence that lawyer knows to be false). The amendment to the rule, provided as part of Ethics 2000, also adds that "[a] lawyer may refuse to offer evidence . . . that the lawyer reasonably believes is false." The *ABA Model Code of Professional Responsibility*, which has largely been replaced by the variations of the *Model Rules of Professional Conduct* in various states, provides merely that a lawyer shall not "[k]nowingly make a false statement of law or fact." DR 7-102(A)(5) (1983).

128. Since the expert evidence "trilogy" of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), and *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), federal judges have been charged formally with the obligation to act as gatekeepers, assuring that unreliable expert testimony is not admitted at trial. A majority of states have followed the so-called *Daubert* reliability test, but a substantial minority still adhere to a

argument is compelling.[129] Since judges have been charged with the obligation to exclude the chaff and admit only the wheat at trial, why would we demand that prosecutors voluntarily refrain from using potentially unreliable evidence? Because prosecutors are different. From prosecutors, we expect prudence, discretion, and justice—not simply advocacy. We simply expect more.

The ABA Standards For Criminal Justice provide only one specific standard relating to expert testimony and that rule is both incomplete[130] and unenforceable.[131] It states, in pertinent part:

> (a) A prosecutor who engages an expert for an opinion should respect the independence of the expert and should not seek to dictate the formation of the expert's opinion on the subject. To the extent necessary, the prosecutor should explain to the expert his or her role in the trial as an impartial expert called to aid the fact finders and the manner in which the examination of the witness is conducted.[132]

While this aspirational language is comforting, it does not accurately reflect the use of experts by prosecutors. The experts from the F.B.I. Crime Laboratory cannot seriously be considered as either "independent" or "impartial," particularly since the laboratory has a policy to assist only law enforcement[133] and efforts to implement *independent* testing of the government's forensic science have met with a great deal of resistance.[134]

"general acceptance" standard. For a state-by-state analysis, see MORIARTY, SCIENTIFIC EVIDENCE, *supra* note 21 at Appx. I.

129. *See, e.g.*, David S. Caudill, *Advocacy, Witnesses, and the Limits of Scientific Knowledge: Is There An Ethical Duty to Evaluate Your Expert's Testimony?*, 39 IDAHO L. REV. 341, 349 (2003) ("[T]he new federal jurisprudence of law/science relations places the responsibility on trial judges and evidentiary rules, not on lawyers. Lawyers are advocates. . . ."). While I agree with Professor Caudill's statements as they apply to civil cases, I do not think this standard is equally applicable to criminal cases where prosecutors are seeking to introduce evidence.

130. The rule is incomplete in failing to address reliability.

131. The *ABA Standards For Criminal Justice* "are intended to be used as a guide to professional conduct and performance. They are not intended to be used as criteria of the judicial evaluation of alleged misconduct of the prosecutor to determine the validity of a conviction." ABA STANDARDS FOR CRIMINAL JUSTICE: PROSECUTION AND DEFENSE FUNCTION, Standard 3-1.1 (3d ed. 1993).

132. ABA STANDARDS FOR CRIMINAL JUSTICE: PROSECUTION AND DEFENSE FUNCTION, Standard 3-3.3 (3d ed. 1993).

133. The FBI Laboratory provides assistance only to law enforcement. *See* FBI, FBI Laboratory Services, http://www.fbi.gov/hq/lab/org/labchart.htm (last visited Apr. 12, 2007).

134. *See* D. Michael Risinger & Michael J. Saks, *Rationality, Research and Leviathan: Law Enforcement-Sponsored Research and the Criminal Process*, 2003 MICH. ST. L. REV. 1023, 1047–48 (describing the scuttling of a large-scale research project to examine a broad range of forensic science practices and explaining the FBI's policy of denying access to DNA researchers unless they were willing to accept coauthorship with an FBI agent).

The role of prosecutors in deciding to exercise their discretion should be encouraged when it comes to the use of substandard forensic science. "The prosecutor's obligation as a 'minister of justice' to prevent the conviction and punishment of innocent people is generally thought to imply a 'gate-keeping' function."[135] And this "gatekeeping function" ought to include the obligation not to use unreliable expert testimony.

Professor Bruce A. Green argues that in certain circumstances, doing justice

> may take a certain amount of inner strength (or strength of character) for an individual prosecutor to decide not to bring criminal charges or to dismiss criminal charges, to comply with procedural norms that make it more difficult to secure convictions, to confess error, or to seek to overturn a conviction that was unfairly procured.[136]

Of course, he is correct. Yet, one wonders if this goal, both laudable and appropriate, will ever realistically be achieved.

It may be that the system asks too much of a lawyer to both play the game and call a foul on himself during it. The first problem, of course, is in the need for second-guessing oneself in the heat of competition, requiring prosecutors to question continually whether the investigation has nabbed the right person. From what we know about psychology, this is an unlikely occurrence.[137] Moreover, it is certainly not the most effective way to prosecute a case.

Professor Andrew Taslitz is a former prosecutor and a current member of the ABA's Ad Hoc Innocence Committee to Ensure the Integrity of the Criminal Process. Professor Taslitz's comment is likely a common and widely shared belief of current and former prosecutors: "I am a former prosecutor, and, as I am sure is true of most prosecutors, not once did I help to convict someone whose guilt I doubted."[138]

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135. Bruce A. Green, *Prosecutorial Ethics As Usual*, 2003 U. ILL. L. REV. 1573, 1588 (2003).

136. Green, *Why Should Prosecutors "Seek Justice"?*, *supra* note 117, at 643.

137. In their compelling argument about the problems regarding observer effects in forensic science, Professor Risinger and co-authors discuss confirmation bias: "the tendency to test a hypothesis by looking for instances that confirm it rather than by searching for potentially falsifying instances . . . ." Risinger et al., *supra* note 39, at 7. While the authors were addressing forensic science principles, the problem of confirmation bias is one that potentially permeates all criminal investigations and trials—once the investigators and prosecutors believe they have the guilty person, their actions will be in accordance with that belief. *Accord* Luna, *supra* note 125, at 1211 n.33 (discussing confirmatory bias in law enforcement as a potential cause for wrongful conviction); Findley & Scott, *supra* note 40, at 307–22 (discussing the various forms of bias that can infect criminal cases).

138. Andrew E. Taslitz, *Wrongful Rights*, CRIM. JUST., Spring 2003, at 4. Professor Zacharias likewise recognizes that post-conviction review by a prosecutor may include the disincentive of "confronting a prosecutor's own error or undermining the reputation of a colleague who erred." Fred C. Zacharias, *The Role of Prosecutors in Serving Justice After Conviction*, 58 VAND. L. REV. 171, 174 (2005).

Unlike many other prosecutors, however, Taslitz has grown skeptical of the accuracy of each conviction, although he believes "the vast majority" of those convicted were guilty. He states "the accumulating evidence examined by the media suggests that my confidence in my near-infallibility was misplaced. There is a significant chance that at least a few of those suspects whom I prosecuted were entirely innocent."[139] Professor Taslitz, however, may be the rare former prosecutor. Other prosecutors are not so willing to revisit the past in an attempt to set their lands in order.[140]

Florida prosecutors began a forceful campaign in 2003 to oppose the use of DNA testing to prove the innocence of convicts, despite the fact that more than 130 prisoners have been freed by DNA testing in the last 15 years.[141] Prosecutors in those cases claim that it is time to "reconsider the power of DNA evidence," claiming its usefulness in many cases is overstated.[142]

A good example of the psychological resistance to reconsidering criminal convictions is the bullet-lead controversy. The FBI recently discontinued the use of bullet-lead following a scathing report by the National Academy of Science (NAS). Despite admitting that the manufacturing and distribution of bullets was too variable to testify about matches, the FBI Laboratory director inexplicably stated, "We stand by the reports of the results we have already issued."[143] Unquestionably, there is real cognitive dissonance involved in believing one's work could have led to the conviction of an innocent person. As is seen repeatedly, prosecutors often object to post-conviction DNA testing, when its results could clearly prove the defendant's innocence.[144]

Moreover, in cases in which misconvicted people are being exonerated, prosecutors often express doubts about the accuracy of the exoneration (perhaps again re-proving the confirmation bias problem)[145] and sometimes even express a sense of persecution. In the case of

139. Taslitz, *supra* note 138, at 4.

140. *See* Medwed, *supra* note 126, at 138–39 (explaining prosecutors' psychological resistance to believing they convicted innocent people).

141. *See* Adam Litpak, *Prosecutors Fight Back as DNA Appeals Rise and Prisoners Go Free*, INT'L HERALD TRIB., Aug. 30, 2003, at News 3.

142. *Id.*

143. Piller, *supra* note 33. For a fuller discussion of the NAS panel report, see Moriarty & Saks, *supra* note 20, at 22.

144. *See* Medwed, *supra* note 126 (explaining the various reasons why prosecutors resist post-conviction testing).

145. *See* Steven A. Drizin & Beth A. Colgan, *Let the Cameras Role: Mandatory Videotaping of Interrogations is the Solution to Illinois' Problem of False Confessions*, 32 LOY. CHI. L. J. 337, 347–48 (2001) (describing the Illinois state prosecutors' refusal to admit they had erroneously convicted defendants who had falsely confessed, despite scientific proof of innocence, proof of physical impossibility of guilt, or the conviction of another person).

Josiah Sutton, for example, the prosecutor stated, "Why is this happening to me when I set out to do the right thing?"[146]

B. Suggested Changes

If it is too much to ask prosecutors to second-guess their scientific and expert evidence in the heat of trial or after a conviction, perhaps prosecutors should think about their discretionary actions in the pre-indictment and pre-trial stages of the case, where much of the forensic science is developed as the bedrock of the prosecution. Although individual prosecutors may have very little ability to make laboratories use blind procedures or become certified, the Attorney General can do so and the elected District Attorneys are able to work with crime laboratories to encourage a more science-based system, where blind testing, controls, and more careful procedures are in place.[147] While there has been movement in that direction, the problems are still widespread.

Individual prosecutors, however, *do* have the choice not to introduce flimsy scientific evidence, such as visual hair comparison evidence or bite-mark evidence, which proficiency studies show has perhaps a greater likelihood of being wrong than being right.[148] Prosecutors can likewise choose to use the evidence in a more limited manner, when serious questions have been raised about the basis for declaring a match, such as with hair, handwriting, or tool-mark comparison.[149]

However, we cannot simply expect prosecutors to back off such compelling evidence without suggesting norms that might compel them to reconsider, much the way Rule 3.8(d) of the *Model Rules of*

146. Alan Bernstein, *Crime Lab Scandal Leaves Prosecutor Feeling Betrayed*, HOUS. CHRONICLE, Mar. 16, 2003, at A23 (quoting Joe Owmby, the Sutton case prosecutor). Owmby also went on in that interview to compare Sutton's experience of spending over four years as a teenager in prison to Owmby's time in the armed forces. "If I were Sutton I would never say that [the system] has worked. Because I have been places for a long period of time that I didn't want to be." According to defense expert criminologist, Professor William Thompson, Owmby should have known about the grossly inaccurate DNA analysis. *Id.*

147. For discussions of the way in which institutional reform of criminal laboratories could be accomplished, see Koppl, *supra* note 37 and ACHIEVING JUSTICE, *supra* note 2.

148. Saks & Koehler, *supra* note 19, at 895 (discussing error rates in proficiency testing).

149. *See, e.g.*, United States v. Green, 405 F. Supp. 2d 104, 109 (D. Mass. 2005) (where the judge reluctantly admitted expert testimony whereby the expert could discuss the points of similarity in bullet casings found at the scene and those test fired from defendant's weapon, but noting the "sloppy practices" of the prosecution experts).

Professional Conduct[150] and the Supreme Court have done in the criminal procedure area with respect to exculpatory evidence.[151] *Model Rule* 3.8 could be amended to provide a new norm governing prosecutorial behavior with respect to expert evidence:

> The Prosecutor in a criminal case shall:
>
> make reasonable efforts to assure that only reliable expert evidence is admitted into evidence. A prosecutor shall not use evidence that she knows or reasonably should know is unreliable.

Additionally, the ABA Standards Relating to the Administration of Criminal Justice could also be amended to include an exhortation against using unreliable expert testimony.

> (a) A prosecutor who engages an expert for an opinion should respect the independence of the expert and should not seek to dictate the formation of the expert's opinion on the subject. To the extent necessary, the prosecutor should explain to the expert his or her role in the trial as an impartial expert called to aid the fact finders and the manner in which the examination of the witness is conducted. *A prosecutor should not seek to rely upon unreliable expert testimony, particularly when such testimony would be important to a determination of guilt.* (suggested amendment in italics)

These suggested changes are not panaceas, but might be one step toward a new prosecutorial philosophy about expert evidence and one that might begin to change the all-too-frequent problem of misconvictions.

An obvious problem with these suggested rule changes, however, is that it requires the prosecutor to determine reliability—rather than allowing the court to do so. Thus, "reliability" would need to be a carefully-defined term that would only require a prosecutor to not rely on evidence that meets a very specific, limited definition. In all other circumstances—such as when the defense raises a challenge to reliability—the prosecutor would be entitled to have the matter of reliability decided by the court. The following is the proposed definition of "unreliable."

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150. MODEL RULES OF PROF'L CONDUCT R. 3.8(d) (2007) provides, in pertinent part, that:

> The prosecutor in a criminal case shall:
> * * *
> (d) make timely disclosure to the defense of all evidence or information known to the prosecutor that tends to negate the guilt of the accused or mitigates the offense, and, in connection with the sentencing, disclose to the defense and to the tribunal all unprivileged mitigating information known to the prosecutor. . . .

But see Richard A. Rosen, *Disciplinary Sanctions Against Prosecutors for* Brady *Violations: A Paper Tiger*, 65 N.C. L. REV. 693, 720 (1987) (expressing skepticism that the *Model Rules of Professional Conduct* help, noting the extremely limited number of sanctions following established *Brady* violations).

151. *See, e.g.*, Banks v. Dretke, 540 U.S. 668 (2004); United States v. Agurs, 427 U.S. 97 (1976); Brady v. Maryland, 373 U.S. 83 (1963) (all discussing the contours of the prosecution's obligation to disclose exculpatory information).

> "Unreliable" denotes that a reasonable person has a factual basis to believe that the proposed evidence is incorrect, inaccurate, incomplete, misleading, substantially flawed, or without solid foundation.

Although this definition falls close to the prohibition against using evidence the lawyer knows or reasonably believes is false,[152] it seeks to fill the gap between arguable evidence and false evidence. This gap is substantial and may well be implicated in numerous wrongful convictions. For example, after prosecutors learn of substantial misconduct in the laboratory, they should refrain from using results generated by that lab and seek to have such results retested by another lab. When prosecutors know that visual hair comparison is terribly flawed, they should not use it in court since they know the potential for error. They may not know that it is false, but they reasonably should know that it is unreliable. We should expect this much from prosecutors.

The second suggested change is one made by other commentators: Begin serious enforcement of the disciplinary rules when the actions of prosecutors contribute to misconvictions.[153] As scholars note, prosecutors rarely receive ethical sanctions for their misconduct, even when it leads to wrongful conviction.[154] Where a prosecutor reasonably should have known[155] that evidence is unreliable and integral to a conviction, that prosecutor should face ethical sanctions for a decision to use it against a defendant.

These suggestions are burdensome for the prosecution. Yet, the real purpose of suggesting these changes is not to tie a prosecutor's hands or to ramp up the rate of disciplinary actions, but rather to encourage prosecutors to rethink evidence that has a long history of being implicated in wrongful convictions, such as microscopic hair comparison.[156] The purpose of these proposed changes is to encourage prosecutors to become more actively involved in the development of the expert evidence that is critical to their cases and to be more rigor-

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152. *See* MODEL RULES OF PROF'L CONDUCT R. 3.3(a)(3) (2007) ("A lawyer shall not knowingly . . . offer evidence that the lawyer knows to be false."); MODEL RULES OF PROF'L CONDUCT R. 3.4(b) (2003) ("A lawyer shall not . . . falsify evidence, counsel or assist a witness to testify falsely. . . .").

153. *See* Ellen Yaroshevksy, *Wrongful Convictions: It Is Time to Take Prosecution Discipline Seriously*, 8 UDC/DCSL L. REV. 275 (2004).

154. BENNETT L. GERSHMAN, PROSECUTORIAL MISCONDUCT § 14.12 (2005 ed.) (discussing the paucity of bar discipline imposed against prosecutors for misconduct relating to trial behavior).

155. The phrase "reasonably should know" is meant to track the definition used in the *ABA Model Rules of Professional Conduct*, R. 1.0 (j) (2007): "'Reasonably should know' when used in reference to a lawyer denotes that a lawyer of reasonable prudence and competence would ascertain the matter in question."

156. *See* Margaret A. Berger, *The Impact of DNA Exonerations on the Criminal Justice System*, 34 J. L. MED. & ETHICS 320, 322 (2006) (noting the role that hair comparison has played in convicting those later exonerated).

ous in requiring better quality evidence to be admitted. One reason there are few disciplinary actions against prosecutors for failing to disclose exculpatory material is that most prosecutors comply with that long-standing requirement. The culture has changed with respect to disclosure. We need to ensure that the culture changes with respect to unreliable evidence as well. We should expect such a change from prosecutors in their role as ministers of justice.

The other justification for this proposed ethics rule is to protect a prosecutor who would not use the evidence except for the concern that a supervisor will disagree with that decision. Thus, the prosecutor concerned about a potential wrongful conviction has a stronger argument that—as an ethical obligation—he cannot use unreliable evidence. It would no longer be sufficient for the prosecutor to leave it up to the judge when there are good grounds to believe the evidence is unreliable. In light of the often political nature of both state and federal prosecutors' offices, this ethics rule could provide a safe harbor for a prosecutor concerned about convicting the wrong person.

IV. JUDICIAL ETHICS

In an article entitled *Judicial Ethics in the Twenty-First Century: Tracing the Trends*, Judge Roger Miner of the Court of Appeals for the Second Circuit carefully examined several major judicial ethics issues, such as: campaigning, recusal, courtroom behavior, financial disclosure, competence, and off-bench activities.[157] Neither that article nor any other article on judicial ethics mentions the role of judicial gatekeeping as an ethical matter—perhaps since most think of the obligation as merely a question of evidence. I posit it is far more than an evidentiary issue. Rather, a judge has an ethical obligation as a minister of justice to be a competent and honest gatekeeper, particularly in those criminal cases in which the liberty of potentially innocent persons are at risk. A fair reading of the *Model Code of Judicial Conduct*, coupled with language from the *Federal Rules of Evidence* and comments from Supreme Court, compel such a conclusion. The well-developed legal and philosophical principles that guide judicial decision-making likewise point to such a conclusion.

A. Substantive Gatekeeping as an Ethical Obligation

1. *The* Federal Rules of Evidence *and Supreme Court Doctrine*

Federal Rule of Evidence 102 provides that the evidence rules "shall be constructed to secure fairness in administration, elimination of unjustifiable expense and delay, and promotion of growth and de-

157. Roger J. Minor, *Judicial Ethics in the Twenty-First Century: Tracing the Trends*, 32 HOFSTRA L. REV. 1107, 1110 (2004).

velopment of the law of evidence to the end that *the truth may be ascertained and proceedings justly determined.*"[158] The Supreme Court of the United States has repeatedly referred to the search for truth as an elemental aspect of criminal trials.[159]

In his concurring opinion in *General Electric v. Joiner*, Justice Breyer discusses the gatekeeping role of the trial judge, stating that "neither the difficulty of the task nor any comparative lack of expertise can excuse the judge" from exercising this obligation.[160] Indeed, he notes, "when law and science intersect, those duties often must be exercised with special care."[161] He reminds the reader that it is "essential in this science-related area that the courts administer the *Federal Rules of Evidence* . . . so that the proceedings may be 'justly determined' . . . [and] 'that the truth may be ascertained.'"[162]

Prior to 1993, the so-called *Frye*[163] test of general acceptance was a primary standard employed to determine the admissibility of novel, scientific evidence in federal and many state courts. The actual use of the *Frye* test was infrequent, in part because it was limited to expert evidence that was both scientific and new to the courts. In 1993, however, in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, the U.S. Supreme Court decided that the *Frye* test was superseded by the *Federal Rules of Evidence* and should not govern the admission of scientific evidence.[164]

During the past decade, the Supreme Court of the United States has issued a ground-breaking trilogy of decisions governing the use of expert evidence at trial: *Daubert* (1993); *General Electric Co. v. Joiner* (1997); and *Kumho Tire Co. v. Carmichael* (1999).[165]

The purpose for which the Court ostensibly granted *certiorari* in *Daubert* was to determine whether the enactment of the *Federal Rules of Evidence* overruled the prior standard governing the admission of

158. FED. R. EVID. 102 (emphasis added).

159. *See, e.g.*, Banks v. Dretke, 540 U.S. 668, 696 (2004) (noting the prosecutor's role to search for truth in criminal trials); Kumho Tire Co., v. Carmichael, 526 U.S. 137, 152–53 (1999) (quoting FED. R. EVID. 102); Nix v. Whiteside, 475 U.S. 157, 171 (1986) (noting the governance of trial conduct should be done in a way that comports with the "search for truth" and holding that the lawyer did not render ineffective assistance of counsel to a client when he urged the client not to commit perjury, finding no constitutional right to commit perjury).

160. Gen. Electric Co. v. Joiner, 522 U.S. 136, 148 (1997) (Breyer, J., concurring).

161. *Id.*

162. *Id.* at 149 (quoting FED. R. EVID. 102). In the paragraph preceding this quote, Justice Breyer is discussing toxic torts in particular. However, a fair reading suggests that his admonition refers not only to toxic torts but to all areas in which science intersects with evidence.

163. Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

164. Daubert v. Merrell Dow Pharm., Inc., 509 U.S 578 (1993).

165. *Id.*; Gen. Electric Co. v. Joiner, 522 U.S. 136 (1997); Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

novel scientific evidence in federal courts. The Court held that the Rules indeed had vitiated the prior *Frye* standard, which mandated that novel scientific evidence had to be "generally accepted" within its scientific community to be admitted at trial.[166] "That austere standard, absent from, and incompatible with, the *Federal Rules of Evidence*, should not be applied in federal trials."[167]

The *Daubert* Court emphasized that rules of evidence had a "liberal thrust" and were incompatible with the rigid general acceptance test. The court envisioned a flexible standard that would govern the admission of all scientific evidence, not just novel scientific evidence. In order to determine whether scientific evidence was admissible, the Court instructed, the evidence must be both "scientific"—that is, grounded in the methods and procedures of science—and be relevant to the inquiry at hand.[168]

In order to be considered scientific knowledge, the Court continued, an inference or assertion must be derived by the scientific method. That is, there must be appropriate validation. While "not presum[ing] to set out a definitive checklist or test," the court made a number of observations, which of course, immediately became a specific checklist followed by many courts. Those observations were: (1) whether the theory or technique can be or has been tested; (2) whether the theory or technique has been subjected to peer review and publication—an aid to evaluating the quality of the testing; (3) the potential or known rate of error of the theory or technique when applied; (4) the existence and maintenance of standards controlling the technique's operation; and (5) whether the technique or theory has been generally accepted in the relevant scientific community.[169]

This flexible standard for expert testimony was premised on the idea of "evidentiary reliability" or "trustworthiness." Rather than wholesale exclusion, *Daubert* opined that "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof," coupled with the court's power to direct verdicts and grant summary judgment, were the "appropriate means of attacking shaky but admissible evidence."[170] The difficulty, of course, is determining where "shaky but admissible" ends and "unreliable thus inadmissible" begins.

166. *Frye*, 293 F. at 1014 (holding that the proposed evidence "must be sufficiently established to have gained general acceptance in the particular field in which it belongs").

167. *Daubert*, 509 U.S. at 588.

168. *Id.* at 589–91.

169. *Id.* at 593–94.

170. *Id.* at 596.

The subsequent cases, *Joiner* and *Kumho Tire*, answered questions that developed in the wake of *Daubert*. In *Joiner*, the court softened the line it had earlier drawn between methodology and conclusions, stating that

> conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the *Federal Rules of Evidence* requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.[171]

Kumho Tire, decided in 1999, held that the *Daubert* gatekeeping requirement applied to all expert evidence, not just scientific, and also reaffirmed the trial judge's latitude in determining what test is appropriate for the type of expertise before the court and whether the proposed testimony meets that test:

> We . . . conclude that a trial court *may* consider one or more of the more specific factors that *Daubert* mentioned when doing so will help determine that testimony's reliability. But . . . the test of reliability is "flexible," and . . . the law grants a district court the same broad latitude when it decides *how* to determine reliability as it enjoys in respect to its ultimate reliability determination.[172]

Although the trilogy embraces a flexible standard, the language of *Kumho Tire* provides an important recommendation: "[A] trial court *should* consider the specific factors identified in *Daubert* where they are reasonable measures of the reliability of expert testimony."[173] When such language is coupled with *Daubert's* concern for "*evidentiary* reliability—that is, trustworthiness[ ],"[174] it becomes apparent that the Supreme Court is urging courts to admit only trustworthy expert evidence based on sufficient facts and data, and to disallow expert evidence that rests on an inadequate foundation or the *ipse dixit* of the expert. Although the standard of evidentiary reliability is flexible, the language of *Daubert* and *Kumho Tire* provide guidance. As Justice Scalia observes in his concurrence in *Kumho Tire*, while "the *Daubert* factors are not holy writ, in a particular case the failure to apply one or another of them may be unreasonable, and hence an abuse of discretion."[175]

Federal Rule of Evidence 702 was amended in 2000 to reflect the Supreme Court's requirements for expert evidence[176] and many state courts have followed the lead of the Supreme Court, incorporating a

171. *Gen. Electric Co.*, 522 U.S. at 146.
172. Kumho Tire Co., v. Carmichael, 526 U.S. 137, 141 (1999) (emphasis in original) (citing Gen. Electric Co. v. Joiner, 522 U.S. 136, 143 (1997)).
173. *Id.* at 152 (emphasis added).
174. *Daubert*, 509 U.S. at 590 n.9 (discussing the distinction between validity and reliability).
175. *Kumho Tire Co.*, 526 U.S. at 159 (Scalia, J., concurring).
176. FED. R. EVID. 702 provides:

reliability-based standard to govern the admission of expert evidence. While a number of states still use a general acceptance standard to analyze expert evidence, many of those states also focus on the trustworthiness of such evidence.[177]

Many judicial decisions about the admissibility of forensic science, however, assume admissibility as a default position, particularly when there has been a long history of judicial admission of the testimony, as is true with fingerprint or handwriting comparisons. In *United States v. Prime*, the court agreed that it "makes sense to demand proof of statistically significant results" for a novel theory, but "where a technique has been repeatedly applied and tested by law enforcement and by courts for over a century, the Court does not believe that the absence of scientific data, without more, should be the death knell for such testimony."[178] So too in the *Llera Plaza* case, Judge Pollak states that since the methodology used to compare fingerprints is "sufficiently reliable for an English court," then it should be sufficiently reliable to satisfy our Rule 702.[179] Yet, as commentators note, false fingerprint identifications have been known about for decades.[180] Thus, the courts' reliance on the long history and acceptance by other courts is not an approach that gets to the heart of *Daubert*'s requirements or the ethical obligation of what judges do as gatekeepers: help assure that justice is done by admitting only reliable evidence.

While both *Prime* and *Llera Plaza* addressed numerous other factors that were relevant to their decision and to *Daubert*'s reliability requirements, neither court seemed willing to acknowledge the possibility that admitting evidence without sufficient scientific foundation increases the chance of convicting an innocent person.

2. *The* Model Code of Judicial Conduct

The *ABA Model Code of Judicial Conduct* provides a great deal of generalized language about the proper actions of judges on and off the

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> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based on 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.

177. Moriarty & Saks, *supra* note 20, at 24.

178. Unites States v. Prime, 220 F. Supp. 2d 1203, 1210 (W.D. Wash. 2002).

179. United States v. Llera Plaza, 188 F. Supp. 2d 549, 575 (E.D. Pa. 2002).

180. *See* Simon A. Cole, *"Implicit Testing": Can Casework Validate Forensic Techniques?*, 46 JURIMETRICS J. 117, 126–28 (2006) (discussing misattributed fingerprints between 1920 and 2004); Robert Epstein, *Fingerprints Meet* Daubert*: The Myth of Fingerprint "Science" is Revealed*, 75 S. CAL. L. REV. 605 (2002).

bench but pays little attention to the details of the actual work of judging.[181] The Preamble provides,

> [T]he judiciary plays a central role in preserving the principles of justice and the rule of law. Inherent in all the Rules contained in this Code are the precepts that judges, individually and collectively, must respect and honor the judicial office as a public trust and strive to maintain and enhance confidence in the legal system.

This hortatory language provides little in terms of specificity, yet the point it makes is clear: the judiciary has an obligation to honestly and meaningfully apply the rule of law.

The concept that judicial office is a "public trust" dovetails with the *Federal Rules of Evidence* admonition that the Rules must be construed to secure fairness, truth, and just determinations. As trustees of justice, it is the courts' obligation to strive continually to see that justice is served. The *Model Code of Judicial Conduct* has recently been revised. The new Rule 2.2 provides normative guidance about the judge's role in interpreting and applying the law, as the selected rule and comments note:

> RULE 2.2: IMPARTIALITY AND FAIRNESS
> **A judge shall uphold and apply the law, and shall perform all duties of judicial office fairly and impartially.**
> COMMENT
> [1] To ensure impartiality and fairness to all parties, a judge must be objective and open-minded.
> [2] Although each judge comes to the bench with a unique background and personal philosophy, a judge must interpret and apply the law without regard to whether the judge approves or disapproves of the law in question.

Thus, as a matter of judicial ethics, courts must interpret and apply the law honestly, without regard to personal approval or disapproval of the law. While one might argue that this new rule imports long-established understanding into text, it is not always apparent by judges who rule on questionable forensic evidence.

The *Daubert* trilogy intended to sharpen the role of the trial judge, to give judges a far more active, determinative role in deciding whether juries would even receive proposed expert testimony.[182] This

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181. *See* MODEL CODE OF JUDICIAL CONDUCT (2007), *available at* http://www.abanet.org/judicialethics/.

182. *See, e.g.*, Joëlle Anne Moreno, *Einstein on the Bench?: Exposing What Judges Do Not Know About Science and Using Child Abuse Cases to Improve How Courts Evaluate Scientific Evidence*, 64 OHIO ST. L.J. 531, 532 (2003) (noting the *Daubert* Court's intent to "radically transform the functional, rather than theoretical, relationship between science and law by forcing judges to play a new, more active role in enhancing the quality of scientific evidence used to decide legal cases"). The Advisory Committee Note to the 2000 amendment to *Federal Rule of Evidence* 702 provides a slightly different view: "*Daubert* did not work a 'seachange over federal evidence law,' and 'the trial court's role as gatekeeper is not intended to serve as a replacement for the adversary system,'" (quoting

role includes an ethical duty to impartially uphold and apply the law as it applies to reliability determination.

Many scientists and legal scholars exhibit a great deal of frustration about how the appellate courts often ignore the mandate of the U.S. Supreme Court to *require* the proponent of expert evidence to prove both its reliability and its relevance. In an article written for the ABA Judges, Professor Saks and I decry the unwillingness of judges to exclude poor quality forensic evidence, noting "[t]here is almost no [prosecution] expert testimony so threadbare that it will not be admitted if it comes to a criminal proceeding under the banner of forensic science."[183]

Much forensic science—hair, fingerprint, and handwriting comparisons—simply has not been proven reliable, and courts' refusal to so find has led the authors of *Modern Scientific Evidence* to describe the devices employed by courts as a "catalog of evasions."[184] At the same time, courts have breezily disallowed defense efforts to introduce well-grounded expert testimony about eyewitness identification problems in all but the most extreme cases.[185] This unwillingness persists in the face of ample evidence that "the most common cause of wrongful convictions is eyewitness identification."[186]

In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, the Supreme Court held unequivocally that the job of the trial judge is to "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable."[187] In *Kumho Tire*, this judicial obligation to ensure reliability was enlarged to include all types of expert testimony.[188] Nonetheless, courts continue to find ways to avoid conducting meaningful reliability analyses of prosecutorial forensic evidence. The subtext to these decisions is that courts believe that these forensic sciences are both accurate and trustworthy and the challenges are specious and formalistic. Yet, the accumulating data suggest there is a great deal more error in forensic sciences than the government acknowledges.

United States v. 14.38 Acres of Land Situated in Leflore County, Miss., 80 F.3d 1074, 1078 (5th Cir. 1996)).

183. Moriarty & Saks, *supra* note 20, at 29.

184. 4 DAVID L. FAIGMAN, ET AL., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY § 34-3 (2006-2007).

185. See cases collected in MORIARTY, SCIENTIFIC EVIDENCE, *supra* note 21, at § 13:55. See also United States v. Smith, 122 F.3d. 1355, 1358 (11th Cir. 1997) (dismissing concerns about eyewitness misidentification and the need for expert testimony by stating that "expert testimony . . . [is] not needed, because the jury [can] determine the reliability of eyewitness identification with the tools of cross-examination.")

186. Gross et al., *supra* note 2, at 542.

187. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 589 (1993).

188. Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

Although courts are granted a great deal of discretion in how to determine reliability, when they are presented with the type of evidence where the *Daubert* factors are a good gauge of reliability, courts should be using those factors, as the Supreme Court in *Kumho Tire* states. And forensic individualization specialties are well-suited to be judged by traditional scientific method factors, as used by the court in *Daubert*.

As trial courts have steadfastly refused to take the *Daubert* trilogy language seriously as applied to individualization evidence, courts of appeals have steadfastly upheld such decisions under an abuse of discretion standard, with very little objection being voiced.[189] One such objection occurred in Judge Michael's dissenting opinion of *United States v. Crisp*.[190] In *Crisp*, the majority found that both handwriting and fingerprint comparison was sufficiently reliable to be admitted, primarily on the grounds that such evidence had been admitted into evidence for decades. Judge Michael disagreed, stating, "I am not suggesting that fingerprint and handwriting evidence cannot be shown to satisfy *Daubert*. I am only making the point that the government did not establish in Crisp's case that this evidence is reliable. The government has had ten years to comply with *Daubert*. It should not be given a pass in this case."[191]

In a December 2005 decision, the Honorable Nancy Gertner, United States District Court Judge for the District of Massachusetts, allowed a tool-mark expert to testify about points of comparison between shell casings, but held he could not render an opinion about whether the same weapon had fired the casings in questions.[192] She noted that although she had serious reservations about his testimony, she felt compelled to let him testify about his observations "because of my confidence that any other decision will be rejected by appellate courts, in light of precedents across the country, regardless of the findings I have made."[193] Although Judge Gertner is not a lone voice in the wilderness, she is the rare judge who seems willing to admit that the forensic emperor is wearing very tatty robes.[194] Most troubling

189. Curiously, however, the Florida District Court of Appeal did reverse the trial court's decision to let Professor Simon Cole testify. Professor Cole is a leading critic of fingerprint comparison. *See* Armstrong v. State, 920 So. 2d. 769 (Fla. Dist. Ct. App. 2006).

190. United States v. Crisp, 324 F.3d 261 (4th Cir. 2003), *cert. denied*, 540 U.S. 888 (2003).

191. *Id.* at 272 (Michael, J., dissenting).

192. United States v. Green, 405 F. Supp. 2d 104, 108–09 (D. Mass. 2005).

193. *Id.* at 109.

194. *See, e.g.*, United States v. Crisp, 324 F.3d 261, 272 (4th Cir. 2003), *cert. den.*, 540 U.S. 888 (2003) (Michael, J., dissenting); United States v. Starzecpyzel, 880 F.Supp. 1027, 1028 (S.D.N.Y. 1995) (a pre-*Kumho Tire* case holding that the *Daubert* standard did not apply to forensic document examiners testifying about handwriting comparison but that if it did apply, "[t]he Court might well have

about the opinion, however, is her obvious distress that the appellate courts will do anything to reverse a decision that excludes the prosecution's forensic evidence. She comments compellingly that

> when liberty hangs in the balance—and, in the case of the defendants facing the death penalty, life itself—the standards should be higher than were met in this case, and than have been imposed across the country. The more courts admit this type of [expert] evidence without requiring documentation, proficiency testing, or evidence of reliability, the more sloppy practices will endure; we should require more.[195]

It is not only judges who have expressed concern about courts' disregard of *Daubert* in criminal cases. Commentators have explained how forensic science errors contribute to misconvictions and discuss how judges often are not applying *Daubert* in any meaningful fashion to exclude expert evidence that lacks an adequate foundation.[196]

3. The Theoretical Basis for the Ethical Gatekeeping Obligation

While the Supreme Court has charged the trial court with being a gatekeeper to make a preliminary analysis of whether the scientific evidence is sufficiently reliable to come before the jury, that entrustment alone does not make the issue one of ethics. Rather, it is the relationship between reliability and actual guilt that makes this an ethical matter. Gatekeeping in criminal cases requires a real determination of reliability because reliability may be meaningfully related to actual guilt. The decision to admit unreliable expert testimony may well increase the likelihood of convicting an innocent person. Thus, it is an ethical and moral duty for the judge to be honest in making decisions about reliability in criminal cases.

It is not enough for courts to pay lip service to this job—this job requires a rigorous approach, where the court, working under the still extant presumption of innocence, puts the evidence through its paces, asking the relevant questions. To use concepts expounded on by Professor Dworkin, we must recognize that legality is important to ensuring integrity.[197] Legality requires both the procedural aspect of

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concluded that forensic document examination constitutes precisely the sort of junk science that *Daubert* addressed.").

195. *Green*, 405 F. Supp. 2d at 109 (permitting a witness to give expert testimony about similarity of marks between shell casings at the scene and from the defendant's weapon, but forbidding the witness from testifying that it was a match "to the exclusion of every other firearm in the world").

196. For a small sample of such articles, see Saks & Koehler, *supra* note 19; Craig M. Cooley, *Forensic Science or Forgettable Science?*, 80 IND. L.J. 80 (2005) (discussing the "broken" forensic science system and the extensive problems that plague forensic science); and D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?*, 64 ALB. L. REV. 99 (2000) ("Criminal defendants virtually always lose their reliability challenges to government proffers.").

197. RONALD DWORKIN, JUSTICE IN ROBES 176 (2006).

applying the law and the substantive aspect that makes such law just. "As trustees of the law, judges have an obligation to uphold and maintain the corpus in individual cases in accordance with the underlying aims of the corpus. This also incorporates an obligation to maintain its integrity."[198]

In applying these concepts to our requirement of judicial application of the *Daubert* canon, we ask the following questions: Can the test in question be repeated and produce identical results? If not, what is the error rate? Is the error rate sufficient to raise serious concerns about reliability? If the test is subjective, how is it reviewed? Is the "trust me, I'm an expert approach" sufficient? The answers to these questions when applied to forensic individualization specialties do not yield encouraging results. Yet, many judges ignore these questions and answers and simply allow the testimony to be admitted.

This judicial response does not fit with our understanding of what judges are ethically obligated to do. There is an "underlying aim" of these reliability factors—the ascertainment of truth, as mandated by Rule 102 of the *Federal Rules of Evidence*. Courts have discretion in the method of application of the factors but "not discretion to abandon the gatekeeping function. . . . [I]t is not discretion to perform the function inadequately. Rather, it is discretion to choose among *reasonable* means of excluding expertise that is *fausse* and science that is junky."[199] Thus, "the judge's reasoning must continually be tied back to the corpus—with integrity and fit."[200] The reason is clear: meaningful application of the reliability requirements is an essential aspect of convicting the guilty and exonerating the innocent—which again, dovetails specifically with the purpose of the *Federal Rules of Evidence* and the purpose—in criminal cases—of *Daubert*'s reliability requirement. For this area of law to maintain its integrity, indeed, its legitimacy and rationality, it must conform with the underlying aim of the reliability requirement.

4. Proposed Solutions

In *Forensic Science: Grand Goals, Tragic Flaws, and Judicial Gatekeeping*, Professor Saks and I conclude that judges are not likely to exclude poor quality prosecution forensic evidence.[201] Despite the argument here that judges should improve their gatekeeping as a question of ethics, it is unlikely that there will be a sudden change in the courts' willingness to exclude forensic evidence from trial. We sug-

198. Sarah M.R. Cravens, *Judges as Trustees: A Duty to Account and an Opportunity for Virtue*, 62 WASH. & LEE L. REV. 1637, 1639–40 (2005).

199. Kumho Tire Co. v. Carmichael, 526 U.S. 137, 158–59 (1999) (Scalia, J., concurring).

200. Cravens, *supra* note 198, at 1641.

201. Moriarty & Saks, *supra* note 20, at 29.

gest, however, that certain judicial actions short of exclusion might be helpful to safeguarding justice and preventing misconvictions. These "middle way" suggestions may be helpful in separating the guilty from the innocent and may address a judge's concern that excluding all forensic individualization testimony will result in the guilty going free.

First, as has occurred in some U.S. District Courts, a judge may limit the admissibility of the evidence, even when not excluding it.[202] Thus, an examiner may discuss the points of comparison and may explain how the comparison is done, but may not declare a match or assert conclusions about identity. This approach recognizes that based upon their experiential knowledge developed from working with prints or handwriting, experts are likely to have knowledge helpful to the jury. At the same time, it avoids some of the serious and troubling foundational problems represented when the expert provides his conclusion about a match.

There are admitted stortcomings to disallowing evidence about a match. If no evidence of a match is admitted, the testimony has far less probative value for the jury. More importantly, if there is no way to determine whether a match actually exists, as critics compellingly argue, why should the jury be permitted to speculate about such a match? Finally, the jury is being asked to decide whether it is a match without any expert guidance on the subject. Nonetheless, on balance, it seems preferable to allow the expert to testify about points of comparison than to allow unbridled testimony about a match. This compromise parallels the rationale of *Federal Rule of Evidence* 704(b), which allows testimony from an expert about a defendant's mental illness but prohibits an expert from testifying whether the defendant possessed "the mental state or condition constituting an element of the crime charged or of a defense thereto."

Second, courts can limit testimony and phrasing that is either overpowering to a jury or misleading. Many of the forensic individualization specialties claim to reach conclusions to degrees of certainty that are not scientifically grounded, such as fingerprint and handwriting comparison.[203] Moreover, witnesses also talk about a match—such as with bite-marks—when all they can legitimately state is that there is some degree of concordance and some similarity, but that such similarity may be true for a large percentage of the population.[204]

202. *See, e.g.*, United States v. Green, 405 F. Supp. 2d 104 (D. Mass. 2005) (limiting expert testimony about tool-marks to points of comparison, but disallowing testimony about conclusions); United States v. Hines, 55 F. Supp. 2d 62 (D. Mass. 1999) (limiting handwriting comparison conclusion); United States v. Santillan, No. CR-96-40169 DLJ, 1999 WL 1201765 (N.D. Cal. Dec. 3, 1999); Pre-Trial Transcript, United States v. McVeigh, No. 96-CR-68, 1997 WL 47724 (D. Colo. Feb. 5, 1997).

203. Moriarty & Saks, *supra* note 20, at 29.

204. *Id.* at 29–30.

Even the statement "consistent with" suggests a match, but may mean far less than that. It may actually mean "consistent with a large percentage of the population," as would be true in microscopic comparison of hair. Although many experts have been allowed to make such statements, the danger is that juries overvalue such testimony, believing that "consistent with" is akin to certainty.[205] Excluding phrases such as "identification," "match," "unique," "no other in the world," "indeed and without doubt," and "zero error rate," would go a long way to rendering this testimony less harmful and more accurate than it currently is. Also, requiring experts to testify about error rates would temper the jury's unreal expectations of such evidence.

Third, courts need to allow defendants to hire experts and allow those defense experts to testify and present contrary evidence. Some courts evaluate defense experts more rigorously than prosecution experts,[206] while others are reluctant to permit experts for the defense to testify and challenge the methods and conclusions of the prosecution's experts.[207] This step, however, is important. If courts are not going to require more of prosecution experts, then they need to permit jurors to learn about the shortcomings of the expert evidence presented as infallible. As the Supreme Court noted in *Daubert*, "presentation of contrary evidence" is one appropriate method of attacking "shaky but admissible evidence."[208]

Finally, courts should be willing to take up the suggestion posed by *Federal Rule of Evidence* 706 and the Supreme Court to "procure the assistance of an expert of its own choosing."[209] While expert panels have been used in civil cases (notably the silicone breast implant cases), courts have been reluctant to use them in criminal cases. Appointing an expert or an expert panel in a high-profile case might be particularly useful for other cases as well.

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205. *Id.* at 30 (citing Professor Sak's preliminary study of how juries misinterpret much of this phrasing).

206. *See, e.g.*, United States v. Frazier, 387 F.3d 1244, 1265 (11th Cir. 2004) (Upholding decision disallowing qualified defense expert on forensic science to testify that in a violent rape case, a transfer of hair or fluids between victim and perpetrator "would be expected," the appellate court held that the phrase "'would be expected' expresses an intrinsically probabilistic or quantitative idea, [yet] the probability it expresses is unclear, imprecise and ill-defined.").

207. *See, e.g.*, State v. Armstrong, 920 So. 2d 796 (Fla. Dist. Ct. App. 2006) (upholding trial court's decision to disallow defense expert's testimony about the unreliability of fingerprint comparison); United States v. Paul, 175 F. 3d 906, 912 (11th Cir. 1999) (affirming district court's decision to exclude defense witness from testifying about shortcomings of forensic document examiner's methodology and conclusions).

208. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 596 (1993).

209. *Id.* at 595.

Judges are trustees of the law. They must begin to live up to this fiduciary responsibility by ensuring that trials which use forensic science are safe for the innocent.

V. CONCLUSION

The number of exonerations continues to grow along with our awareness that all is not well with forensic science. This Article encourages the Ministers of Justice to exercise their discretion in ways that will help reduce the number of innocent people who are wrongfully convicted on the basis of poor-quality forensic science. It is not just a question of evidence. It is a matter of ethics.