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Protecting Factfinders from Being Overly Misled, While Still Admitting to Weakly Supported Forensic Science into Evidence

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PROTECTING FACTFINDERS FROM BEING OVERLY MISLED, WHILE STILL ADMITTING WEAKLY SUPPORTED FORENSIC SCIENCE INTO EVIDENCE

Michael J. Saks*

*“Washington state legislators, faced with 10th graders’ declining achievement test scores in math and science, are poised to just eliminate the tests altogether,” according to a Seattle Times Report.*¹

I. INTRODUCTION

If the students cannot pass the test, what is one to do? Answer: Get rid of the test. The legislators of Washington State were not the first to think of this idea. Federal (as well as state) judges, encountering a similar problem when applying the *Daubert* trilogy² to the non-science forensic sciences,³ devised a similar solution.

The judges, however, have been more veiled about their solution, and they have reason to be. A state legislature is constitutionally empowered to impose or to withdraw a test as it seems reasonable to advance the health, safety, or welfare of the people. Not so for a judge of an inferior federal court who wishes to ignore three unanimous⁴ Supreme Court decisions—which, with increasing commitment, direct lower courts to conscientiously subject expert evidence to meaningful tests appropriate to the nature of the subject matter, and to exclude any proffered testimony that is not able to meet the test. But conscientious and straightforward application of those Supreme Court opinions would have led to the exclusion of large segments of the non-science forensic sciences, and that prospect apparently did not sit well with quite a few judges.⁵

Many judges were surprised and puzzled to discover that the *Daubert* trilogy led them to the brink of flunking large portions of a number of fields that had long ago become familiar fixtures in the criminal courts. After all, the Supreme Court spoke of

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1. Chuck Shepherd, *News of the Weird*, www.newsoftheweird.com/archive/nw070506.html (accessed Mar. 26, 2008) (internal parenthetical omitted).

2. See *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 149 (1999); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997); *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993).

3. Forensic individualization sciences—fingerprints, handwriting, toolmarks, bitemarks, etc.—as well as fire and arson.

4. As regards the core issues in the opinions.

5. Justice Scalia anticipated a certain amount of recalcitrance, and so in a concurrence to *Kumho Tire* wrote “in a particular case the failure to apply one or another of [the *Daubert* factors] may be unreasonable, and hence an abuse of discretion.” 526 U.S. at 159 (Scalia, O’Connor & Thomas, JJ., concurring).

the “liberal thrust” of the Federal Rules and their “general approach of relaxing the traditional barriers to ‘opinion’ testimony,” while rejecting *Frye*’s⁶ “rigid” requirements. How could a supposedly easier test (*Daubert*) exclude fields that had presumably been admitted under a more demanding test (*Frye*)?

There are several answers. Most of the non-science forensic sciences had never been subjected to any formal test of admission,⁷ so who knows how they would have fared under *Frye*.⁸ Moreover, if one looks not at what *Daubert* says, but instead at what *Daubert* does, the mystery begins to solve itself. In place of *Frye*’s test of “general acceptance,” *Daubert* substitutes a test of “evidentiary reliability” (validity) of the expertise’s underlying claims.⁹ For many questions, *Frye* and *Daubert* will properly lead to the same result. But, on the one hand, where sound science has not yet come to be widely known or accepted, *Daubert* will admit more readily than *Frye*, and *Daubert* will appear to be the more liberal test. On the other hand, where a field came to be generally accepted among its practitioners even though they had never gotten around to testing their assumptions, *Frye* will admit more readily than *Daubert*, and *Daubert* will appear to be the more rigorous test.

Few fields enjoy so much “acceptance”—within their own domain, among the general public, and among lawyers and judges—while having done so little validity testing, as do the non-science forensic sciences. Few contemporary fields of empirical, material, observable endeavor have done so little testing, taken so much on faith, and asked that so much of their offerings be taken on their *ipse dixit*, and yet have come to be so widely well-accepted. It was inevitable that such fields would run into standards they could not meet when the “general acceptance” test was replaced with the “evidentiary reliability” test. The surprise and the problem result not from something odd about the legal test being applied,¹⁰ but from our belated realization that some of the disciplines being tested have not done their homework.

6. *Frye v. U.S.*, 293 F. 1013 (D.C. Cir. 1923).

7. See generally David L. Faigman et al., *Modern Scientific Evidence: The Law and Science of Expert Testimony* (West 2008); Michael J. Saks, *Merlin and Solomon: Lessons from the Law’s Formative Encounters with Forensic Identification Science*, 49 *Hastings L.J.* 1069 (1998). Interestingly, on the same day that Judge Van Orsdel handed down his decision in *Frye*, he also handed down a landmark admission decision on firearms identification, in which he did not bother to use the precepts he announced in *Frye*.

8. We have some hints. Two non-science forensic sciences that were formally subjected to *Frye* analyses were bitemarks and voiceprints. *People v. Marx*, 54 Cal. App. 3d 100 (2d Dist. 1975). Bitemark identification was found to satisfy California’s version of the *Frye* test because the “tools” being used (casts, photographs, etc.) were not at all novel, ignoring the fact that the use to which those tools were being put was altogether novel, and notwithstanding then-widespread doubts among forensic dentists. *Id.* at 107–13. See also Faigman et al., *supra* n. 7, at ch. 36; Saks, *supra* n. 7. Voice spectrography cases were an ideal poster child for one of the common criticisms of the *Frye* test. The asserted expertise was admitted every time a gatekeeping court employed the *Frye* test narrowly (that is, regarded practitioners of the craft as the appropriate reference population whose acceptance or rejection was to be adopted by the court) and excluded the testimony every time a broad *Frye* test was employed (that is, regarding the proper reference population to include, along with practitioners of the craft, acoustical engineers, statisticians, linguists, and other fields which studied and used voice spectrography). Faigman et al., *supra* n. 7, at ch. 37.

9. *Daubert*, 509 U.S. 579. The “overarching subject [of Rule 702] is the scientific validity—and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission.” *Id.* at 594–95.

10. If we accept the notion, as scientists (and, we had thought, society) have for quite some time, that—when it comes to matters of general, observable, repeatable facts—proof of validity is better than the say-so of

II. BACKGROUND

A. *Weakness of the Non-Science Forensic Sciences*

The non-science forensic sciences have not yet been able to establish the validity and the limits of their most fundamental claims.¹¹ As Giannelli and Imwinkelried have commented, “all the areas of forensic science discussed in this article share two common denominators: In each area little rigorous, systematic research has been done to validate the discipline’s basic premises and techniques, and in each area there is no evident reason why such research would be infeasible.”¹² Thus, their courtroom testimony routinely exaggerates what they can know and what they can infer about the evidence at issue. Thoughtful members of those fields, as well as observers from related fields, have long been aware of this, even though popular culture and courts believe otherwise. In this section, I will mostly allow those thoughtful observers to speak for themselves.

Fingerprint identification, the reigning champion of the non-science forensic sciences, notwithstanding puffery in its sales pitches¹³ and by its many fans in the popular media, had long been recognized as unable to establish its most fundamental claims with any existing evidence, data, studies, or theory which it possessed. Biological researchers, after working diligently to try to prove that no two fingerprints could be alike, concluded: “[I]t is impossible to offer decisive *proof* that no two fingers bear identical patterns.”¹⁴ Put simply, “the suggestion that recorded fingerprints are unique has never been rigorously checked.”¹⁵ “It is impossible to prove any human characteristic to be distinct in each individual without checking every individual, which has not been done.”¹⁶

In response to the coming of *Daubert*, some government agencies began to look into the problem of preparing some of the non-science forensic sciences for their anticipated test of admission. Participants in the National Institute of Justice Fingerprint Advisory Committee, which “included practicing latent print examiners, researchers, and senior administrators from Federal, State, and private forensic science laboratories . . . reached a consensus that the field needs . . . [b]asic research to determine the scientific

11. See e.g. Faigman et al., *supra* n. 7, at chs. 32–37; William C. Thompson & Simon A. Cole, *Psychological Aspects of Forensic Identification Evidence*, in *Expert Psychological Testimony for the Courts* 31–68 (Mark Costanzo et al. eds. 2006); Paul Giannelli, *Forensic Science*, 34 J.L., Med. & Ethics 310 (2006) (discussing the numerous concerns that have arisen regarding the use of forensic evidence); Erin Murphy, *The New Forensics: Criminal Justice, False Certainty, and the Second Generation of Scientific Evidence*, 95 Cal. L. Rev. 721 (2007); D. Michael Risinger et al., *Exorcism of Ignorance as a Proxy for Rational Knowledge: The Lessons of Handwriting Identification “Expertise”*, 137 U. Pa. L. Rev. 731 (1989); Michael J. Saks & Jonathan J. Koehler, *The Individualization Fallacy in Forensic Science Evidence*, 61 Vand. L. Rev. 199 (2008); Michael J. Saks & Jonathan J. Koehler, *The Coming Paradigm Shift in Forensic Identification Science*, 309 Sci. 892 (2005) [hereinafter Saks & Koehler, *The Coming Paradigm*].

12. Paul Giannelli & Edward Imwinkelried, *Scientific Evidence: The Fallout from Supreme Court’s Decision in Kumho Tires*, 14 Crim. J. 12, 40 (2000).

13. See Simon A. Cole, *Suspect Identities: A History of Fingerprinting and Criminal Identification* (Harvard U. Press 2001).

14. Harold Cummins & Charles Midlo, *Finger Prints, Palms and Soles: An Introduction to Dermatoglyphics* 154 (Blakiston Co. 1943).

15. David J. Balding, *Weight-of-Evidence for Forensic DNA Profiles* 54 (Wiley 2005).

16. *Id.*

validity of *individuality in friction ridge* examination based on measurement of features, quantification, and statistical analysis.”¹⁷ More recently, an FBI Laboratory committee assembled, inter alia, “to evaluate the fundamental basis for the science of friction ridge skin impression pattern analysis” and concluded, once again, that “[e]mpirical studies can never prove absolutely the hypothesis of uniqueness.”¹⁸ Moreover, the committee was “not able to find a single peer-reviewed publication that definitely addressed all of the basic assumptions of friction ridge impression analysis.”¹⁹

David Stoney has explained how fingerprint examiners actually reach their judgments of identity: “The criteria for absolute identification in fingerprint work are subjective and ill-defined. They are the product of probabilistic intuitions widely shared among fingerprint examiners, not of scientific research. This generally is unappreciated.”²⁰

How much correspondence between two fingerprints is sufficient to conclude that they [are the same pattern]? . . . An adequate answer . . . is not currently available. The best answer at present . . . is that this is up to the individual expert fingerprint examiner to determine, based on that examiner’s training, skill, and experience. Thus, we have an ill-defined, flexible, and explicitly subjective criterion for establishing fingerprint identification.

Any unbiased, intelligent assessment of fingerprint identification practices today reveals that there are, in reality, no standards.²¹

Because of the subjectivity and variability in standards from one examiner to another, the FBI committee recommended that the quality of latents and their effects on examiner judgments need to be studied: “[Q]uality/clarity, i.e., distortion and degradation of prints, is the fundamental issue that needs to be addressed.”²² “There is no defined quality metric”²³ for assessing the quality of a latent. Areas where the committee believed research is most needed to develop objective criteria include: Assessing quality of latents, image capture and quality (where no data were found to exist), simultaneous impressions (where they found, among FBI latent print examiners, “[c]onsiderable variation in the definition of simultaneous prints as well as the practices for interpreting such evidence”), and criteria for making an exclusion.²⁴ Relatedly, the Inspector General of the Department of Justice has called for procedural reforms which “will require dramatic changes in the way latent fingerprint identifications are performed

17. Natl. Inst. Just., *Forensic Friction Ridge (Fingerprint) Examination Validation Studies 3–4* (U.S.D.O.J. 2000) (available at <http://www.ncjrs.gov/pdffiles1/nij/sl000386.pdf>).

18. Bruce Budowle et al., *Review of the Scientific Basis for Friction Ridge Comparisons as a Means of Identification: Committee Findings and Recommendations*, 8 *Forensic Sci. Commun.* § II.B (Jan. 2006), http://www.fbi.gov/hq/lab/fsc/backissu/jan2006/research/2006_01_research02.htm.

19. *Id.*

20. David A. Stoney, *Fingerprint Identification*, in *Modern Scientific Evidence: The Law and Science of Expert Testimony* 360 (David L. Faigman et al. eds., West 2008).

21. David A. Stoney, *Measurement of Fingerprint Individuality*, in *Advances in Fingerprint Technology* 327, 329 (Henry C. Lee & Robert E. Gaensslen eds., 2d ed., CRC 2001).

22. Budowle et al., *supra* n. 18, at § III.

23. *Id.*

in the FBI Laboratory and likely in other forensic laboratories as well.”²⁵

Similar realizations hold for non-science forensic sciences other than fingerprint identification. Commenting on the broad domain of criminalistics, an FBI Laboratory examiner writing in the *Journal of Forensic Sciences* noted: “[I]t must be observed that there is no rational or scientific ground for making claims of absolute certainty in any of the traditional identification sciences, which include fingerprint, document, firearms, toolmark, and shoe and tire-tread analysis.”²⁶

Two leading practitioners and researchers in forensic odontology reviewed the literature of their field. They wrote: “This article presents a discussion of the scientific basis for human bitemark analyses” and “[t]he review revealed a lack of valid evidence to support many of the assumptions made by forensic dentists during bitemark comparisons.”²⁷

In the area of handwriting identification, strong advocates for the field conceded the long-standing lack of evidence supporting its claims: There is an “admittedly sparse history of carefully controlled empirical studies,” and “there certainly has been a shortage of studies . . .”²⁸ There is “an acute lack of empirical evidence on the proficiency of document examiners” and therefore “it is widely agreed that testing of professional document examiners and acquiring data on their abilities . . . are necessary.”²⁹ “Document examiners have not done the kind of empirical research that could have and should have been done.”³⁰ “On that the critics are absolutely correct.”³¹ There is “indeed a dearth of published empirical information relating to the proficiency of document examiners . . .”³²

In addition to the absence of foundational studies informing the principles on which examiners rely, absence of standards to which examiners must hew, and a free-for-all of subjective discretion—examinations often are contaminated by examiners knowing of other raw investigatory information, theories, speculations, expectations, hopes, and desires, about a case they are working on. When one examiner checks the work of another examiner,³³ the second examiner knows what the first examiner thinks he or she has found. Such context information is known to systematically skew the judgments of examiners, and is regarded as bad practice in most fields, but is standard

25. U.S. Dept. Just. Off. Inspector Gen., *A Review of the FBI's Handling of the Brandon Mayfield Case* 271 (Mar. 2006).

26. Stephen G. Bunch, *Consecutive Matching Striation Criteria: A General Critique*, 45 *J. Forensic Sci.* 955, 956 (2000).

27. Ian Pretty, I & David Sweet, *The Scientific Basis for Human Bitemark Analyses—A Critical Review*, 41 *Sci. & Just.* 85, 85 (2001).

28. Oliver Galbraith et al., *The “Principle of the Drunkard’s Search” as a Proxy for Scientific Analysis: The Misuse of Handwriting Test Data in a Law Journal Article*, 1 *Intl. J. Forensic Doc. Examrs.* 7, 7 (1995).

29. Moshe Kam et al., *Proficiency of Professional Document Examiners in Writer Identification*, 39 *J. Forensic Sci.* 5, 778 (1994).

30. Michael Risinger et al., *Brave New “Post-Daubert World”—A Reply to Professor Moenssens*, 29 *Seton Hall L. Rev.* 405, 411 n. 29 (1998) (quoting Moenssens) (internal quotation marks omitted).

31. *Id.*

32. *Id.*

33. Something that has come to be called “peer review” in an effort to make it sound as though the non-

operating procedure in the forensic sciences.³⁴

Champod and Evett—respectively, forensic scientists in Switzerland and Britain—argue that “there is, at present, a major contradiction between the scientific status that is claimed and the operational paradigm to which its practitioners subscribe”³⁵—due to the field’s rejection of conventional scientific criteria for thinking about, measuring, and evaluating probabilistically the evidence with which they work. Though writing specifically about fingerprint identification, they could be talking about all of the disciplines that claim to be individualizing the source of markings and materials left at crime scenes. Instead of asking courts to take the examiner’s word for the validity of what they offer the court, based on nothing more than their “experience,” Champod and Evett argue that “the scientist should, as far as possible, support his/her opinion by reference to logical reasoning and an established corpus of scientific knowledge. This is what we mean by ‘transparency;’ the former ‘in my experience’ justification we refer to as ‘obscurity.’”³⁶

Forensic scientists and thoughtful prosecutors attribute the failure of forensic science to develop its scientific foundations to the credulousness of the courts.

The uniqueness of friction ridge patterns, be they fingerprints, palmprints, or bare footprints, has long been accepted by the scientific community and by the courts. The reason for this widespread acceptance perhaps lies in the fact that fingerprints were first introduced at a time in our history when society was less demanding of proof and more trusting of authority. As a result of widespread recent challenges that friction ridge identification, as well as other forms of personal identification evidence, lack a proven scientific foundation, efforts have been ongoing to supply today’s demands of validation and verification that is . . . required by . . . *Daubert v. Merrell Dow Pharmaceuticals*.³⁷

Similarly, an assistant U.S. attorney, speaking at an FBI sponsored conference, commented: “[T]he QDE [questioned document examiner] community [has failed] to develop a rigorous empirical defense of its theories and methods.”³⁸ He further stated, “*Daubert* challenges prosecutors and the QDE community to work with scholars to develop ways to demonstrate to courts . . . that the basic principles of QDE analysis are

34. See generally Budowle et al., *supra* n. 18, at § II.B.1.

To reduce examiner bias a blind technical review comprising the ACE portion of the ACE-V process should be carried out by another qualified examiner To be truly blind, the second examiner should have no knowledge of the interpretation by the first examiner (to include not seeing notes or reports). Such a technical review is absolutely necessary

Id.; Itiel E. Dror et al., *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 *Forensic Sci. Intl.* 74 (2005); 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); Michael Saks, *Context Effects in Forensic Science: A Review and Application of the Science of Science to Crime Laboratory Practice in the United States*, 43 *Sci. & Just.* 77 (2003).

35. Christophe Champod & Ian W. Evett, *A Probabilistic Approach to Fingerprint Evidence*, 51 *J. Forensic Identification* 101, 101 (2001).

36. *Id.* at 106–07.

37. Andre A. Moenssens, *Validating Friction Ridge Examination Techniques Proposals Solicited*, http://forensic-evidence.com/site/ID/ID_fpValidation.html (accessed Mar. 26, 2008).

38. J. Orenstein, Panel Remarks, *Effect of the Daubert Decision on Document Examination from the Prosecutor’s Perspective*, (2d Intl. Symposium Forensic Exam. Questioned Docs., Albany, N.Y., June 14–19, 1999), 11 *J. Forensic Sci. Comm’n.* 100 (1999), <http://www.fbi.gov/hq/lab/fsc/backissu/oct1999/abstrcte.htm>. 6

scientifically valid”³⁹ The reason for this shortcoming is that “forensic document examiners traditionally had not had any particular reason to conduct validity studies because their testimony was being admitted without them.”⁴⁰

Although these weaknesses might be news to courts, they are better known among forensic scientists themselves, where concerns about *Daubert* had either been how to prepare for the great test of validity⁴¹ that had been put off for so many decades, or how to keep flying under its radar. An amicus brief, drafted by a consortium of law enforcement groups, including forensic scientists, as the Supreme Court was preparing to hear *Kumho Tire*, urged the Court to exempt from validity testing under *Daubert* prosecution expert evidence,

the great bulk of [which] does not involve scientific theories, methodologies, techniques, or data in any respect [but instead offers opinions] about such things as . . . fingerprint, footprint and handprint [identification], handwriting analysis, firearms markings and toolmarks and the unique characteristics of guns, bullets, and shell casings, and bloodstain pattern identification.⁴²

Ironically, then, the same fields that had spent much of the previous century claiming a place on the witness stand on the basis of their claim to being “sciences,” now sought to remain in court by arguing that what they do “does not involve scientific theories, methodologies, techniques, or data in any respect.”⁴³

Exaggerated belief in the forensic individualization sciences appears to play an important part in erroneous convictions. Forensic science errors account for more erroneous convictions than any source of evidence other than eyewitnesses.⁴⁴

B. *Judicial Treatment of the Non-Science Forensic Sciences Post-Daubert*

What do judges do when they come nose to nose with the shortcomings of the non-science forensic sciences in the course of deciding a challenge to admissibility under *Daubert/Kumho Tire* or similar state rules?

Recall the admissibility rules. In *Daubert* a unanimous Supreme Court held that “[p]roposed testimony must be supported by appropriate validation.”⁴⁵ The opinion did not regard this test as limited to “novel” forms of expert evidence,⁴⁶ and the implications of that non-limitation were readily seen by courts which read the *Daubert* opinion with any care.⁴⁷ Moreover, courts were not to trust in the expert’s claims of “experience”—

39. *Id.*

40. *Id.*

41. See John I. Thornton & Joseph L. Peterson, *The General Assumptions and Rationale of Forensic Identification*, in *Modern Scientific Evidence: The Law and Science of Expert Testimony* ch. 29:35–29:47 (David L. Faigman et al. eds., West 2008) (outlining which fields within forensic science are vulnerable to challenge under *Daubert*).

42. Br. for Ams. for Effective L. Enforcement et al. as Amicus Curiae at 15, *Kumho Tire*, 526 U.S. 137.

43. *Id.*

44. Brandon L. Garrett, *Judging Innocence*, 108 Colum. L. Rev. 55, 81 (2008); Saks & Koehler, *The Coming Paradigm*, *supra* n. 11, at 892.

45. *Daubert*, 509 U.S. at 590.

46. *Id.* at 592.

47. See e.g. *U.S. v. Hines*, 55 F. Supp. 2d 62, 67 (D. Mass. 1999) (noting that the Supreme Court in *Daubert* and *Kumho Tire*’s plainly include a re-examination even of ‘generally accepted’ venerable, technical fields”);

the most frequent refuge of the non-science forensic sciences. The commentary to the 2000 revision of the Federal Rules cautions:

If the witness is relying solely or primarily on experience, then the witness must explain how that experience leads to the conclusion reached, why that experience is a sufficient basis for the opinion, and how that experience is reliably applied to the facts. The trial court's gatekeeping function requires more than simply "taking the expert's word for it."⁴⁸

Accepting the idea that there must be a demonstrably valid basis to an expert's testimony, and that the opinions must rest soundly on that foundation,⁴⁹ does not appear to have created any existential gatekeeping crises for courts in civil cases, as they vigorously applied it to exclude experts proffered by the parties.⁵⁰

U.S. v. Horn, 185 F. Supp. 2d 530, 554 (D. Md. 2002) ("[E]verything old is new again.").

48. Fed. R. Evid. 702 advisory comm. nn. (citing *Daubert v. Merrell Dow Pharms, Inc.*, 43 F.3d 1311, 1319 (9th Cir. 1995)).

49. "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." *Gen. Elec.*, 522 U.S. at 137.

50. See D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?* 64 Alb. L. Rev. 99 (2000) (outlining a statistical overview, finding that *Daubert* challenges are both more common and more successful in civil cases than in criminal cases); see also e.g. *Oddi v. Ford Motor Co.*, 234 F.3d 136, 157 (3d Cir. 2000) (observing that, "[a]lthough *Daubert* does not require a paradigm of scientific inquiry as a condition precedent to admitting expert testimony, it does require more than the haphazard, intuitive inquiry that [the engineering expert here] engaged in"); *Cook v. American S.S. Co.*, 53 F.3d 733, 739 (6th Cir. 1995) (reversing a trial court decision to admit expert testimony an expert qualified in testing and failure analysis offered an opinion that a marine rope had failed from exposure to a torch, where the only "test" performed by the expert "was to visually examine the frayed end of the [alleged defective] line with the naked eye and under a low power microscope"); *McMahon v. Bunn-O-Matic*, 150 F.3d 651, 658 (7th Cir. 1998) ("We have said before, and reiterate, that '[a]n expert who supplies nothing but a bottom line supplies nothing of value to the judicial process.'" (brackets in original)); *Rudd v. Gen. Motors Corp.*, 127 F. Supp. 2d 1330, 1337 (M.D. Ala. 2001) ("[Amended Rule 702] makes it clear that this court is now *obliged* to screen expert testimony to ensure it stems from, not just a reliable methodology, but also a sufficient factual basis and reliable application of the methodology to the facts."); *U.S. v. Orians*, 9 F. Supp. 2d 1168, 1173 (D. Ariz. 1998) (stating that *Daubert* "does not require the court to limit its inquiry to those individuals that base their livelihood on the acceptance of the relevant scientific theory. These individuals are often too close to the science and have a stake in its acceptance; i.e., their livelihood depends in part on the acceptance of the method."); *Traharne v. Wayne Scott Fetzer Co.*, 156 F. Supp. 2d 690, 694 (N.D. Ill. 2001) (following *Daubert* that expert evidence must be "more than subjective belief or unsupported speculation" (quoting *Daubert*, 509 U.S. at 590)); *Stanczyk v. Black & Decker, Inc.*, 836 F. Supp. 565, 567 (N.D. Ill. 1993) (excluding plaintiff's expert where the proffered witness "offered no testable design to support his concept"); *In re TT Boat Corp.*, 1999 WL 694095 (E.D. La. Sept. 7, 1999) (commenting on an expert who "did not use any scientific or other technical methodology to arrive at his opinion. He, like Descartes, basically says, 'I think; therefore, it is.' This is insufficient under Federal Rule of Evidence 702."); *Reali v. Mazda Motor of Am., Inc.*, 106 F. Supp. 2d 75, 80 (D. Me. 2000) ("All I have is [the expert's] assertion—unsupported by citation to studies, tests or statistics . . . That is not enough."); *Saia v. Sears Roebuck & Co.*, 47 F. Supp. 2d 141, 148, 144 (D. Mass. 1999) (noting that, as "the Supreme Court recognized in both *Daubert* and again in *Kumho*, the ability to verify a hypothesis is at the core of a court's inquiry;" in addition, rejecting the argument that an expert or an expert's field are entitled to admission in the case at bar because they had been admitted in prior cases, commenting that "numbers do not an argument make"); *Kemp v. Tyson Seafood Group, Inc.*, 2000 WL 1062105 (D. Minn. July 19, 2000).

Both *Daubert*, and *Kumho*, make clear that the day of the expert, who merely opines, and does so on the basis of vague notions of experience, is over. Experts are now held to a level of accountability, that requires factual predicates, in historical fact, or in competent evidence, which allows a factfinder to independently verify the accuracy of the expert's results.

Id. at *7; *In re TMI Litig. Cases Consolidated II*, 922 F. Supp. 1038, 1046-48 (M.D. Pa. 1996), *aff'd*, 193 F.3d 613, 708 (3d Cir. 1999) (excluding the testimony of the plaintiffs' epidemiological expert based on research design considerations; because the sampling selection criteria were unknown, the error rate was potentially large); *Mays v. St. Farm Lloyds*, 98 F. Supp. 2d 785, 787 (N.D. Tex. 2000) (The expert "entirely fail[ed] to provide a basis for his conclusion"); *U.S. v. Chevrolet, Inc.*, 972 S.W.2d 713, 721-26 (Tex. 1998) (excluding testimony of an expert who testified that the Chevrolet truck involved in the accident was not a Chevrolet truck).

On the criminal side of the hallway, the picture has been quite different. Thoughtful members of the forensic science community, and agencies that employed and supported the non-science forensic sciences, recognized their shortcomings, worried about their fate at the hands of judges armed with *Daubert*, and, in an effort to head off their likely exclusion, began to undertake research in an effort to meet the *Daubert/Kumho* standards. The courts themselves took a strikingly different view of forensic individualization science's wares.

Some courts simply did not and do not see any problem. They have absorbed the popular culture and have no idea how to evaluate empirical claims. These judges were raised believing the unsupported claims of the non-science forensic sciences, and cannot see beyond those blinders. They perceive no absence of supporting evidence; the mere assertions of proponents are more than sufficient. Those judges hold a hearing or not, and then think that the non-science forensic sciences look fine whether or not they are. One of the clearest examples of this is provided by *United States v. Havvard*, in which a *Daubert* challenge to fingerprint expert testimony was denied.⁵¹ The court begins its opinion on the *Daubert* motion by inadvertently revealing its own strong assumptions: "The court's decision may strike some as comparable to a breathless announcement that the sky is blue and the sun rose in the east yesterday."⁵² Finding no research, data, or other scientific basis for the claims of fingerprint expert evidence, the court looked for other bases to try to justify admission, and it found them: For each of the *Daubert* factors that the proponents of fingerprint expert evidence failed to provide, the court invents a legal process substitute. For example, courtroom testing substitutes for scientific testing. The fact of a history of admission in courts (general acceptance by judges, as it were) fills in for the absence of research publications, of scientific testing, of results from such testing. Where the experts made assertions that the court found non-credible, the court replaced those assertions with its own more credible version. Following this curious exercise, in which the court replaced the *Daubert* factors with its own shadow factors, the judge declared this expert evidence to be "the very archetype of reliable expert testimony under [*Daubert*]."⁵³

Some courts fear what they might learn, and that they will not be able to find a path around what they learned, and so they simply refuse to hold a hearing.⁵⁴ The most forthright example of this might be one given by Judge McKenna who, as explained below, found handwriting expert evidence to be sorely deficient, but nevertheless found a way to let it in.⁵⁵ With *Kumho Tire*, the Supreme Court closed off that evasion route. When later asked what he would do if the same case came before him now, he answered

1998) ("Mechanical engineering is science" and the requirement of scientific validity applies to non-novel, experience-based engineering testimony.); *Werner v. Pittway Corp.*, 90 F. Supp. 2d 1018, 1032 (W.D. Wisc. 2000) (The expert offered nothing but a "bare conclusion" and utterly failed to explain the reasoning process he used.).

51. 117 F. Supp. 2d 848 (S.D. Ind. 2000).

52. *Id.* at 849.

53. *Id.* at 855.

54. *U.S. v. Starzeczyzel*, 880 F. Supp. 1027 (S.D.N.Y. 1995).

55. *Id.* at 1044.

that he would not hold a hearing on the question; just let it in.⁵⁶

Other courts do see the problem, but cannot bring themselves to apply *Daubert* in any manner that would lead to exclusion of the evidence. As one commentator wryly observed: “It seems that the only standard the courts are requiring of forensic science is that it be incriminating to the defendant.”⁵⁷ As we review a number of examples, the reader is invited to contrast these to the treatment courts have given to civil cases, illustrated in the margin, above.

*United States v. Starzecpyzel*⁵⁸ entertained a challenge to the admissibility of asserted handwriting identification expertise. After a full *Daubert* hearing, the court concluded: “Were the Court to apply *Daubert* to the proffered FDE testimony, it would have to be excluded. This conclusion derives from a straightforward analysis of the suggested *Daubert* factors”⁵⁹ “[F]orensic document examination constitutes precisely the sort of junk science that *Daubert* addressed.”⁶⁰ Despite these findings, the *Starzecpyzel* court admitted the document examiner’s testimony, reasoning that *Daubert* was intended to apply to scientific evidence, forensic handwriting expertise clearly was not science, therefore *Daubert* was inapplicable, and hence the testimony was admissible.⁶¹ So “effective” was this reasoning that numerous other courts copied it in dealing with challenges to asserted handwriting expert evidence in their own cases. *Kumho Tire* put an end to artificial distinctions between science and non-science, holding that all proffered expert evidence, whatever it might wish to call itself, had to demonstrate its validity or be excluded, implicitly overruling *Starzecpyzel* and its numerous imitators.

The claims of fingerprint identification experts have been challenged in dozens of in limine hearings in recent years. With one exception, all of those ultimately resulted in admission. At the same time, none of those courts was able to point to facts that met the requirements of *Daubert*. In *Havvard*,⁶² as noted above, finding no scientific basis for fingerprint expert evidence, the court replaced each *Daubert* factor with some trial process factor. In another fingerprint case, *United States v. Llera-Plaza (Llera-Plaza II)*,⁶³ the court acknowledged the gaping absence of empirical research testing the claims of fingerprint examiners, saying: “I conclude that the one *Daubert* factor which is both pertinent and unsatisfied is the first factor—‘testing.’”⁶⁴ But the court admitted the testimony anyway. Query, however, if there is no empirical research testing the technique and its assumptions, what can be the basis for admission under *Daubert*: No

56. Lawrence M. McKenna, Panel Remarks, *Science, Technical Knowledge, and Skill: Who Is an “Expert?”* (Natl. Conf. Sci. & L., San Diego, Cal., Apr. 15–16 1999) (copy of transcr. available at www.ncjrs.gov/pdffiles1/nij/179630.pdf). Of course! Now that the test that would have to be administered cannot be passed, don’t give the test.

57. Craig M. Cooley, *Reforming the Forensic Science Community to Avert the Ultimate Injustice*, 15 Stan. L. & Policy Rev. 381, 381 (2004).

58. 880 F. Supp. 1027.

59. *Id.* at 1036.

60. *Id.* at 1028.

61. One could characterize this reasoning as: “Heads it’s in; tails it’s not out.”

62. 117 F. Supp. 2d 848.

63. 188 F. Supp. 2d 549 (E.D. Pa. 2002).

published peer reviewed research, no known error rates, and no basis for general acceptance. The judge in *United States v. Crisp*⁶⁵ took the view that the Supreme Court could not have wanted the non-science forensic sciences to be excluded and therefore, notwithstanding *Daubert*'s apparent commands, soundness (validity, reliability) of the evidence could not be the touchstone of admission. Consequently, given the serious shortcomings in the scientific foundations of fingerprint expert evidence, the court created alternative, less rigorous, criteria that would facilitate admission.⁶⁶ Although the majority of a three-judge panel reviewing a decision to admit fingerprint expert testimony voted to admit on the ground that such testimony had been admitted for most of the century, a dissenting judge, attempting to test the facts against the *Daubert* criteria, concluded: "At . . . trial the government's fingerprint identification evidence failed to satisfy any of the *Daubert* requirements for establishing scientific reliability."⁶⁷ A review of the many cases in which courts wrestled with challenges to fingerprint expert testimony characterized those courts' opinions (in which they could not find bases for admission that comported with the requirements of *Daubert* and *Kumho Tire*, but nevertheless found various ways to rule the testimony admissible) as "a catalog of evasions."⁶⁸ These included: reversing the burden of proof, ignoring *Kumho Tire*'s task-at-hand requirement, conclusory judgments with no analysis, substitute trial process criteria for scientific criteria, relying on general acceptance, emphasizing flexibility of criteria, and bringing the standards down to meet the expertise.

Some courts considering challenges to firearms identification testimony could not find adequate basis for admission under *Daubert*, but still did not exclude the testimony. One court commented that the examiner "conceded, over and over again, that he relied mainly on his subjective judgment. There were no reference materials of any specificity, no national or even local database on which he relied. And although he relied on his past experience with these weapons, he had no notes or pictures memorializing his past observations."⁶⁹ Another court noted: "[D]uring the testimony at the hearing, the examiners testified to the effect that they could be 100 percent sure of a match. [Yet] an examiner's bottom line opinion as to an identification is largely a subjective one, there is no reliable statistical or scientific methodology"⁷⁰

In a challenge to the admissibility of microscopic hair identification evidence, the Kentucky Supreme Court purported to be conducting an analysis under that state's version of *Daubert*.⁷¹ The record was devoid of research studies on the validity of asserted microscopic hair identification expertise, so the Court relied entirely on the "general acceptance" criterion of *Daubert*.⁷² But there was no evidence of that in the record either. So the Court turned to its own earlier (pre-*Daubert*) Kentucky decisions in

65. 324 F.3d 261 (4th Cir. 2003).

66. Sound familiar? If the student cannot pass the test, the test can be made as easy as it needs to be to ensure that the student passes it.

67. *Crisp*, 324 F.3d at 273.

68. Faigman et al., *supra* n. 7, at ch. 32.

69. *U.S. v. Green*, 405 F. Supp. 2d 104, 107 (D. Mass. 2005).

70. *U.S. v. Montiero*, 407 F. Supp. 2d 351, 372 (D. Mass. 2006).

71. *Johnson v. Commonwealth*, 12 S.W.3d 258, 260–64 (Ky. 1999).

72. To this extent, the *Daubert* analysis became the equal of a *Frye* analysis.

search of general acceptance of microscopic hair comparison. But not one of the earlier cases admitting testimony on hair identification said a word about general acceptance of the technique. So the Court stated that it would assume that those earlier decisions must have: addressed the question, conducted an appropriate inquiry, and found general acceptance. How else could they have admitted the testimony?⁷³ This case, more than most, shows the lengths to which courts will go to admit asserted forensic science. This Court had to create out of thin air the basis for admission under the weakest of the *Daubert* prongs.⁷⁴

State v. Coon,⁷⁵ a case involving a challenge to the admissibility of voiceprint identification, was the Alaska Supreme Court's vehicle for adopting *Daubert* for their state. One might have thought that on such an occasion the Court would be especially cautious about what was required to be in the record and painstaking in its evaluation of the record. The first time the case reached the Supreme Court, it remanded with instructions to develop a more complete record so that the high Court would be in a position to apply either a *Daubert* or a *Frye* analysis to the arguments for and opposing admission (depending on whether it held that Alaska would remain a *Frye* state or become a *Daubert* state). When the case returned to the Alaska Supreme Court, the Court first adopted *Daubert* as the new expert evidence admissibility test.⁷⁶ But the court below had failed to supplement the record with evidence that might have informed a *Daubert* analysis because it had been offered no scientific evidence by the parties, had demanded none, and did no research of its own.⁷⁷ An ironic state of affairs considering that for voice spectrography, unlike most other forensic identification techniques, there is a substantial scientific literature upon which to draw.⁷⁸ The Alaska Supreme Court did not appear to mind at all. It conducted a limited and superficial review of the record and the research on which one would expect a *Daubert* decision to depend, doing little more than quoting the trial court's conclusory assertions, and then declared voiceprint expert evidence to meet its new standard.

In short, courts have found a multitude of ways to avoid the outcomes *Daubert* would have led to, had it been applied conscientiously to the reality of the non-science forensic sciences.

C. *An Alternative History*

What might history have looked like if these various courts had conscientiously

73. The court must have assumed that *Frye* was in effect and that its predecessor courts were following *Frye*. What the court did not realize was that *Frye* had not been adopted, or even mentioned, in Kentucky, until after those cases were decided. See Michael J. Saks, Johnson v. Commonwealth: *How Dependable is Identification by Microscopic Hair Comparison*, 26 Advoc. J. Crim. Just. Educ. & Res. 14 (2004).

74. The U.S. Supreme Court has stated that general acceptance, with nothing else, would not suffice for admission in federal courts. *Kumho Tire*, 526 U.S. at 151.

75. 974 P.2d 386, 388 (Alaska 1999).

76. *Id.* Interestingly, in favor of retaining the *Frye* test, the government made two arguments: One, that the *Daubert* standard is so low that it will lead to the admission of junk science and, two, that the *Daubert* standard is so high that it will exclude forensic science. The only way both arguments can exist coherently is if the government believes junk science is superior to forensic science. *Id.* at 388-89.

77. Permissible when a court is searching for legislative facts. See Fed. R. Evid. 201 advisory comm. nn.

applied the *Daubert* trilogy to the facts about the expert evidence before the court, and followed the law where it led? That portions of some or many of the non-science forensic sciences would have been excluded (or sharply limited) is a conclusion that seems hard to avoid. If it were possible to apply the *Daubert* trilogy and find the areas of expert evidence we have been discussing admissible on *Daubert/Kumho* grounds, surely the numerous courts reviewing numerous areas of forensic science would have written those opinions that would have persuasively explained why these fields pass *Daubert* muster, rather than the evasive ones they did write.

Such outcomes are not impossible. There have been moments when judges have appreciated the shortcomings of the non-science forensic sciences and followed *Daubert* where it led.⁷⁹ Had those decisions been the dominant judicial response, what might that have led to?

Suppose judges had simply excluded certain tasks-at-hand of certain forensic sciences when the proffered expert testimony did not meet the requisite admissibility standards?⁸⁰ In such an event, forensic science organizations and their government sponsors and supporters would have leaped into action, seeing to it that studies were conducted testing the claims of the expert fields so that they could establish their admissibility and return to court. At some level this is exactly what started to happen when *Daubert*, and then *Kumho Tire*, were decided. Task forces formed, agencies prepared requests for proposals, and some research projects were begun.⁸¹ When these agencies realized that the courts were not serious about subjecting the non-science forensic sciences to *Daubert* scrutiny, the efforts faded almost as quickly as they had blossomed.

Thus, what the courts exclude or accept has the effect of prompting or subduing research. Were such research projects carried on in sufficient depth and breadth, and with the sincerity of scientific inquiry,⁸² the result would be a body of data that revealed what claims are more and what claims are less valid—ideally a map, of sorts, which showed courts which areas of the formerly non-science forensic sciences could be relied upon to provide what level of dependability. With such information, courts could make

79. *U.S. v. Saelee*, 162 F. Supp. 2d 1097 (D. Alaska 2001); *U.S. v. Fujii*, 152 F. Supp. 2d 939 (N.D. Ill. 2000); *U.S. v. Llera Plaza (Llera Plaza I)*, 2002 WL 27305 at *11 (E.D. Pa. 2002), *vacated and superseded, Llera Plaza II*, 188 F. Supp. 2d 549; *State v. Rose*, K06-0545 (Md. Cir. Balt. Co. 2007); and perhaps the numerous courts that followed the example of *Hines*, 55 F. Supp. 2d at 73, and only partially admitted the proffered expert evidence.

80. A variation on this is that courts might have declared a date certain (five or ten years, say) beyond which exclusion would occur if the fields had not by then undertaken research which succeeded in establishing their admissibility under the rules of evidence. This approach offers certain obvious benefits (e.g., leaves the status quo intact, but sends a powerful message that the courts are going to start expecting something of greater substance from these fields) and certain obvious complications (convictions occurring during this interregnum might have to be revisited if it later turned out that the evidence which had been admitted was inadmissible and that without it no reasonable jury could have convicted). Moreover, the only way the courts of a jurisdiction could manage such an approach in a coordinated fashion would be if the highest appellate court in the jurisdiction imposed the interregnum, probably on appeal of such a decision by a trial court.

81. For example, consider the RFPs promulgated by the NIJ. See Natl. Inst. Just., *supra* n. 17.

82. And not merely to manufacture pseudo-scientific evidence designed to support predetermined conclusions (like a pharmaceutical company that funds research with the understanding that the research must be designed or the data massaged or the results interpreted so as to keep the company's product on the market). See e.g. D. Michael Risinger & Michael J. Saks, *A House with No Foundation*, 20 Issues Sci. & Tech. 35

informed and sensible decisions about what to admit, what to admit with cautions to the factfinder, and what to exclude.

III. SUGGESTED JUDICIAL STRATEGIES FOR SURRENDERING TO THE IMPULSE TO ADMIT NON-SCIENCE FORENSIC SCIENCE WITHOUT FORSAKING THE LEGAL POLICY UNDERLYING RULE 702

We can assume that harmony will some day come to the law of admissibility of expert evidence. Either the courts will get around to following the rule⁸³ or the rule will be changed to reflect what judges are comfortable deciding.⁸⁴

In the meantime, judges feel a strong—for most, an irresistible—impulse to admit the non-science forensic sciences regardless of what the evidence on the evidence teaches them about it. Whatever the reason, in criminal cases, most judges respond to government proffers of non-science forensic science, no matter how weak it is, regardless of the circumstances, by admitting the testimony.

Can something constructive be accomplished? Can ways be found to balance the need judges feel to allow the testimony and the law's interest in preventing exaggerated, assertedly "scientific," claims to be presented entered as evidence? Can we resolve the conflict without doing violence to either their intuitions of the judges or the rights of defendants to have evidence offered against them that is not misleading, exaggerated, false?

This final section presents a set of possible actions judges can take, short of exclusion, to manage expert testimony from the non-science forensic sciences in ways that might help achieve the needed balance.

A. *Partial Admission*

Courts that have employed partial admission allow the expert witness to testify concerning observable things, which the expert is presumed to be a better observer of than the jury, but the expert witness is barred from offering inferences about the meaning of what has been observed, leaving that to the jury. The rationale is that the expert's field has not established its expertise in drawing those inferences, or a sound basis for drawing them.⁸⁵ For example, a handwriting examiner would be permitted to describe features of the questioned and known writing but would not be permitted to assert an opinion on whether the defendant was the source of the questioned writing. In essence, this is a bar on ultimate issue testimony by fields which have not established their ability under *Daubert* to draw accurate inferences.

Relatedly, courts could (and should) prohibit assertions of unique individualization, because such claims go beyond the actual knowledge and capabilities

83. Leading to something like the alternative history described in the preceding section.

84. Much as the Washington legislature did with student testing, but this time by a body authorized to change Rule 702, rather than by individual judges evading Rule 702.

85. This method has been used in *Green*, 405 F. Supp. 2d at 106–07 (firearms identification); *Hines*, 55 F. Supp. 2d at 63 (handwriting); and *Llera Plaza I*, 2002 WL 27305 at *11 (fingerprints). In the instance of

of any field,⁸⁶ and courts could (and should) bar ultimate conclusions of identity.⁸⁷

B. Require That Examinations Be Conducted Using Blind Testing and Evidence Lineups

Although the forensic science field does not protect examiners from extraneous and potentially misleading and biasing information, courts could require that examinations have been conducted blind or their results be barred.⁸⁸ Blind testing is common not only in many other fields of science (where blind and double-blind procedures are the norm in scientific research) but in such everyday activities as blind taste tests, blind grading, blind review by peer-reviewed journals, and so on. The failure to use blind testing is responsible for errors in which examiners inadvertently or deliberately take account of information not needed to make their judgments. Moreover, the use of blind testing would prevent fraudulent reports and testimony by examiners, because if they do not know what results are “needed” by investigators, they cannot manufacture them. A legally imposed requirement of blind testing would protect examiners from information that contaminates their work, and protect courts from examiners who have been tainted.

Blind examination is an important step, but more is needed. Where only a single suspect has been developed in a case, it is obvious who the suspect is, implying that inclusion of that person or object is the desired or expected results. These are the parallel of show-ups in the eyewitness context. Evidence lineups would be superior procedures to evidence show-ups for the same reasons that eyewitness lineups are considered superior to eyewitness show-ups.

C. Require That the Examiner and Lab Be Certified

Certification by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) provides partial assurance that competent work is being done. Like all certification programs, the review itself has the limitations of whatever it chooses to look at and how well it looks. For example, ASCLD/LAB certification overlooks any requirement of blind (or masked) examination because the field of forensic science has never adopted such procedures, even though their value is well recognized in many conventional scientific fields. Moreover, the certification does not assure that any given examiner in any given case does everything properly and reaches accurate conclusions. But laboratories and examiners with certification are generally likely to be doing better work than laboratories without certification.

86. Saks & Koehler, *supra* n. 11.

87. Fed. R. Evid. 704(b) does this categorically for ultimate issue expert testimony on mental states constituting an element of a crime or defense to a crime.

88. Extensive discussion of blind testing can be found in Risinger et al., *supra* note 34, at 45–47. See also *Public Health, Confidentiality, and the Right to Know* (Fall 2007).

D. Require Experts to Stay Firmly Within the Bounds of What Their Field Actually Knows

In important ways, testimony by examiners in various forensic individualization sciences regularly steps outside of the zone of what the field actually knows and can support. Courts have come to accept, without ever having asked for or received proof, that examiners can do what they claim to be able to do.⁸⁹ If courts closely scrutinized the claims being made or implicit in their testimony, and permitted experts to testify only to that which they could satisfactorily support with sound bases, less would be testified to, but what the factfinder was told would be more dependable.⁹⁰

E. Prohibit Overpowering and Exaggerated Terminology

The way a forensic science expert witness presents testimony can affect the factfinder's understanding of what conclusions the evidence can and cannot support.

Some subfields of forensic science, and some individual witnesses, use terminology that sounds as though it admits of no conclusion except the certain positive identification advocated by the witness, when such conclusions are unsupported (on scientific grounds) in any field of forensic science. One field insists that its practitioners use terminology that is absolute, categorically concluding that an "identification" either exists or does not (or that no opinion can be reached), when, ironically, only a probabilistic statement—and a subjective probability estimate at that—could accurately reflect the real basis of the judgment the examiner has made.

Some subfields use terms that do not readily convey to laypersons what the examiner intends. For example, if a forensic dentist states that in his opinion a "match" has been found between the bite mark in a victim and the defendant's dentition, the jury is likely understand that to mean that the defendant is the biter. But, for forensic dentists, the actual meaning of a match is: "[S]ome degree of concordance . . . similarity" but no "expression of . . . specificity" intended; generally similar but true for "a large percentage of the population."⁹¹ Other fields' experts might use the word "match" to mean a very strong probability of common source, but the judge or jury may well think it means an even more certain linkage than intended or supportable. A "match" merely indicates that two marks or objects appear indistinguishably alike. A second step must be performed to interpret the likelihood that two things that "match" originated from the same source.

Overreaching and exaggeration should be banned from the witness box. Any expression of absolute certainty by forensic identification experts, or any term likely to be understood by the fact finder as conveying such a strong and unjustifiable meaning, should be prohibited. Among such suspect terms would be "identification," "match," "unique," "no other in the world," "identification to the exclusion of all others in the

89. See e.g. Risinger et al., *supra* n. 11; Saks, *supra* n. 7.

90. This is the more general principle of what is expressed *supra* note 85 and accompanying text.

91. Am. Bd. Forensic Odontology, *ABFO Bitemark Guidelines*, http://www.forensidentistryonline.org/Forensic_pages/1/bitemark_guidelines.htm#ABFO%20Bitemark%20Methodology%20Guidelines (accessed March 29, 2009) <https://digitalcommons.law.utulsa.edu/tlr/vol43/iss2/13>

world,” and “consistent with.”

F. *Jury Instructions about the Limits of a Field’s Expertise*

Some courts have decided that if shaky but admissible expert forensic evidence comes before the jury, the jury should be instructed in a manner that allows it to put the evidence in proper perspective. One example is the court in *Starzecpyzel*,⁹² which concluded that handwriting identification was junk science, but decided to admit it anyway. In an effort to offset the impact of a “scientist’s expert” testimony, the court also fashioned an instruction to the jury in an effort to temper the effects the testimony might have. The court explained to the jury that forensic document examiners are not scientists per se but are more akin to craftsmen, and that their testimony may be less precise than, perhaps, a chemist’s.

The concern that jurors might overvalue forensic science expert opinion is at the heart of the rules of evidence, which set higher thresholds for the admission of expert testimony. If the testimony is admitted despite the fact that jurors (as well as judges) have exaggerated beliefs in its soundness at the same time that it cannot persuasively demonstrate its validity, the problem can be ameliorated somewhat by an appropriate instruction. Of course, the court has to properly understand the nature of the field and the evidence before it, and their limitations, in order to draft such an instruction.

G. *Use of Court-Appointed Experts and Panels of Experts*

The law does not limit judges to hearing from only the experts offered by the parties. In appropriate circumstances, such as deciding whether or how much evidence to admit, judges have the power to obtain help from additional experts. By rule or by their common-law powers, all courts have the authority to appoint their own expert witnesses or panels of experts;⁹³ some have the authority to appoint advisory juries.⁹⁴ Many also have the authority to appoint consulting experts (that is, experts who will assist the judge in deciding, more akin to a confidential aide than as a witness). Given the myriad forms of forensic science and the number of challenges raised to such evidence, these panels could be quite helpful to courts deciding the admissibility of controversial forensic science.

Selecting and communicating with such experts must, of course, be handled with care, such as to avoid improper ex parte exchanges. But the greatest challenge will be to appoint individuals who do not merely echo the unsupported claims⁹⁵ under scrutiny, but who can give real assistance to the court.⁹⁶

92. 880 F. Supp. 1027.

93. The power of courts to appoint their own expert witnesses has been codified in Fed. R. Evid. 706 and affirmed by the Supreme Court in *Daubert*, where the Court recognized a trial court’s ability to “procure the assistance of an expert of its own choosing.” 509 U.S. at 595. Science panels have been appointed to assist the court in complex tort cases, notably in the silicone breast implant litigation. *Norris v. Baxter Healthcare Corp.*, 397 F.3d 878, 881–82 (10th Cir. 2005).

94. Fed. R. Civ. P. 39.

95. Imagine appointing a committee of astrologers to evaluate astrology.

96. Courts might follow the strategy of the National Academy of Science, which, for example, in evaluating the validity of voiceprint identification, appointed a panel consisting not only of practicing voiceprint

H. Enabling the Adversary Process to Work by Facilitating Counter-Testimony

Criminal defendants typically come to court without experts, whether to challenge admissibility in limine or to testify at trial concerning the weight to be accorded the expert's testimony. The most obvious reason for this is a lack of funds to pay for them.

Greater availability of competing expert witnesses in cases involving forensic identification testimony would fit well with Daubert's recognition that "presentation of contrary evidence" is one appropriate "means of attacking shaky but admissible evidence."⁹⁷ For the adversary process to work, both advocates need the resources to present their strongest case. Courts can help make the adversary process work (and work for the court) by making such appointments more often.⁹⁸

examiners but of people from other relevant fields, such as acoustical engineering, linguistics, and statistics.

97. *Daubert*, 509 U.S. at 596.

98. In the long run, this would lead to improvement in forensic science because weaknesses in forensic science are in part the result of a lack of adversarial testing of forensic science throughout most of the twentieth century.
<https://digitalcommons.law.utulsa.edu/tlr/vol43/iss2/13>