

**AN UNCIVIL ACTION:  
CRIMINALIZING *DAUBERT* IN PROCEDURE  
AND PRACTICE TO AVOID WRONGFUL CONVICTIONS**

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## I. INTRODUCTION

*Daubert v. Merrell Dow Pharmaceuticals, Inc.*<sup>1</sup> has been with us for over 20 years. The case itself was a products liability civil suit, but the decision upended the calculus of scientific evidence in federal courts. The use of *Daubert* in criminal cases has been awkward and somewhat clunky for those 20-plus years. Nonetheless, its execution in criminal cases should be revisited. The use of forensic science in criminal cases, much like the use of *Daubert*, is at an awkward stage. It has been seven years since headlines screamed that forensic science suffers from a basic lack of actual scientific research to support many forensic science disciplines.<sup>2</sup> That lack of research led to testimony—and closing arguments—that exceeded the boundaries of the science. Inaccuracies, impossible statistics, and misstatements about the certainty of the conclusion have been recurring themes in legal, academic, and media discourse.<sup>3</sup> Crime lab scandals exposing evidence tampering, perjury, and falsified results represented an even more troubling aspect of forensic science errors.<sup>4</sup>

In a perfect world, we would like to assume that the court system is responsible for—and effective at—weeding out the forensic riffraff so that we avoid the ultimate consequence of imprisoning innocent people. As a legal and societal matter, the need for reliable scientific evidence in cases that irreparably affect people's liberty should be obvious. Moreover, the number of cases (both civil and criminal) that depend upon and revolve around scientific evidence only increases as technology advances.<sup>5</sup> But neither gravity nor volume has meaningfully influenced an evidentiary landscape that grants free admission to

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<sup>1</sup> 509 U.S. 579 (1993).

<sup>2</sup> See generally NAT'L RESEARCH COUNCIL, NAT'L ACAD. OF SCI., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009) [hereinafter NAS REPORT].

<sup>3</sup> See, e.g., Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 VA. L. REV. 1, 12 (2009). This study found that in 60% of cases involving forensic testing the forensic analyst provided some form of invalid testimony. *Id.* at 9; Denise Lavoie, *Ex-state Chemist Annie Dookhan Pleads Not Guilty*, BOS. GLOBE (Jan. 31, 2013), <https://www.bostonglobe.com/metro/2013/01/31/chemist-annie-dookhan-pleads-not-guilty-obstruction/8LSIUcGVCpXkSHYred9omI/story.html>.

<sup>4</sup> See, e.g., Madeleine Baran, *Ramsey County Medical Examiner Michael McGee Under Investigation*, MPR NEWS (Sept. 6, 2011), <https://www.mprnews.org/story/2011/09/05/ramsey-county-medical-examiner-faces-investigation>; Justin Peters, *The Unsettling, Underregulated World of Crime Labs*, SLATE (Jan. 14, 2013, 3:46 PM), [http://www.slate.com/blogs/crime/2013/01/14/serrita\\_mitchell\\_dna\\_the\\_unsettling\\_underregulate\\_d\\_world\\_of\\_crime\\_labs.html](http://www.slate.com/blogs/crime/2013/01/14/serrita_mitchell_dna_the_unsettling_underregulate_d_world_of_crime_labs.html); Paul C. Giannelli, *The North Carolina Crime Lab Scandal*, 27 CRIM. JUST., no. 1, Spring 2012, [http://www.americanbar.org/content/dam/aba/publications/criminal\\_justice\\_magazine/sp12\\_sci\\_evidence.authcheckdam.pdf](http://www.americanbar.org/content/dam/aba/publications/criminal_justice_magazine/sp12_sci_evidence.authcheckdam.pdf).

<sup>5</sup> See NAS REPORT, *supra* note 2, at 85.

forensic science in criminal cases.<sup>6</sup> Courts have admitted testimony from the panoply of forensic science disciplines without any evidence to establish either the validity of the approach or the accuracy of the conclusions. The 2009 *NAS Report* marked a tipping point in forensic science.<sup>7</sup> The Report concluded that a “‘Badly Fragmented’ Forensic Science System Needs Overhaul.”<sup>8</sup> Congressionally mandated, the Report found “serious deficiencies” in the forensic science system and called for a severe overhaul and the implementation of stringent research in forensic science.<sup>9</sup> The Report further underscored the utter lack of “peer-reviewed, published studies establishing the scientific bases and reliability of many forensic methods.”<sup>10</sup>

Although many forensic practitioners perceived the Report as an attack aimed solely at the forensic science field,<sup>11</sup> the Report held multiple parties responsible for the lack of reliability in forensic science, including the end-user: “the courts have been utterly ineffective in addressing this problem.”<sup>12</sup> For its part, forensic science, as an industry, is responding to the call to action.<sup>13</sup> The same cannot be said of the legal system. The phrase “utterly ineffective” certainly puts the onus on the courts as well, and for good reason.

State and federal courts have embraced forensic science without subjecting it to the kind of scrutiny that is required of novel scientific or technical evidence in civil cases (more on that later). Instead, courts acquiesce to the

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<sup>6</sup> Paul Giannelli, *Daubert and Criminal Prosecutions*, 26 CRIM. JUST., no. 3, Fall 2011, [http://www.americanbar.org/content/dam/aba/publications/criminal\\_justice\\_magazine/fa11\\_SciEvidence.authcheckdam.pdf](http://www.americanbar.org/content/dam/aba/publications/criminal_justice_magazine/fa11_SciEvidence.authcheckdam.pdf).

<sup>7</sup> *Id.*; Press Release, Nat’l Acad. of Sci., ‘Badly Fragmented’ Forensic Science System Needs Overhaul; Evidence to Support Reliability of Many Techniques Is Lacking (Feb. 18, 2009), <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12589>.

<sup>8</sup> Press Release, Nat’l Acad. of Sci., *supra* note 7; NAS REPORT, *supra* note 2.

<sup>9</sup> Press Release, Nat’l Acad. of Sci., *supra* note 7.

<sup>10</sup> *Id.*; NAS REPORT, *supra* note 2.

<sup>11</sup> See Matthew Clarke, *Crime Labs in Crisis: Shoddy Forensics Used to Secure Convictions*, PRISON LEGAL NEWS (Oct. 15, 2010), <https://www.prisonlegalnews.org/news/2010/oct/15/crime-labs-in-crisis-shoddy-forensics-used-to-secure-convictions/> (reporting that officials who run crime labs were predictably outraged by the *NAS Report*); Gregory S. Klees, *SWGUN Initial Response to the NAS Report*, SCI. WORKING GRP. FOR FIREARMS & TOOLMARKS, [http://www.swgun.org/index.php?option=com\\_content&view=article&id=37&Itemid=22](http://www.swgun.org/index.php?option=com_content&view=article&id=37&Itemid=22) (last visited Nov. 3, 2016) (indicating the Scientific Working Group for Firearms and Toolmarks was already aware of the scientific and systemic issues presented in the *NAS Report*).

<sup>12</sup> NAS REPORT, *supra* note 2, at 53.

<sup>13</sup> The National Commission on Forensic Science (“NCFS”) was established by the Department of Justice in 2013 in partnership with the National Institute of Standards and Technology. The goal of the NCFS is “to enhance the practice and improve the reliability of forensic science.” Brought about in part because of the *NAS Report*, the NCFS seeks to “promote scientific validity, reduce fragmentation, and improve federal coordination of forensic science.” *National Commission on Forensic Science*, U.S. DEP’T OF JUST., <http://www.justice.gov/ncfs> (last visited Nov. 3, 2016).

untested arguments that forensic science is (1) generally accepted, (2) scientific, and (3) reliable.<sup>14</sup> None of these assumptions have been subjected to adequate scrutiny from either a scientific or a legal standpoint.

Courts have allowed unproven forensic science to perpetuate its leaps of faith by operating under several assumptions promoted by both the forensic science community and the lawyers who rely on that evidence. First is the notion that uniqueness is embedded in a forensic discipline that enables it to identify a piece of evidence and reliably attribute it back to a single source. This may be true of DNA (and even DNA can be fallible),<sup>15</sup> but for other evidence, namely, pattern identification evidence,<sup>16</sup> that notion is a leap of faith that lacks scientific foundation.<sup>17</sup> Second is the assumption that the associated method of analysis is

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<sup>14</sup> See *infra* note 23.

<sup>15</sup> Courts, lawyers, crime labs, and the media often refer to DNA evidence as the “gold standard.” See, e.g., Jonathan Jones, *Forensic Tools: What’s Reliable and What’s Not-So-Scientific*, PBS FRONTLINE (Apr. 17, 2012), <http://www.pbs.org/wgbh/frontline/article/forensic-tools-whats-reliable-and-whats-not-so-scientific/>. That claim holds up for the most part in a single profile comparison: one profile in the evidence to compare with one suspect—1:1 is always the easiest. DNA mixtures, however, present a far more difficult conundrum. Progress in analysis and data interpretation techniques have caused practitioners to modify how they calculate probabilities when it comes to individualizing a suspect from a DNA mixture. On the one hand, this is a good thing: Better science equates to more reliable convictions. On the other hand, lots of cases were subject to substandard practices.

In August 2015, the Texas Forensic Science Commission publicly revealed serious issues with DNA mixture interpretation. TEX. FORENSIC SCI. COMM’N, UNINTENDED CATALYST: THE EFFECTS OF 1999 AND 2001 FBI STR POPULATION DATA CORRECTIONS ON AN EVALUATION OF DNA MIXTURE INTERPRETATION IN TEXAS (2015), <http://tidc.texas.gov/media/40444/Memo-Presentation-from-Texas-Forensic-Science-Commission.pdf>. Among the revelations: in May 2015, the FBI notified crime laboratories it had identified “minor discrepancies” in its population databases that have been used by labs in DNA analysis since 1999. The FBI attributed the discrepancies to human error and technological limitations. *Id.*

<sup>16</sup> For much forensic science, “the human examiner is the main instrument of analysis” where the forensic analyst examines “visual patterns and determines if they are ‘sufficiently similar’ to conclude that they originate from the same source.” Saul M. Kassir et al., *The Forensic Confirmation Bias: Problems, Perspectives, and Proposed Solutions*, 2 J. APPLIED RES. MEMORY & COGNITION 42, 43 (2013). Forensic science disciplines have been divided into two main classifications: laboratory based disciplines and disciplines based on “expert interpretation of observed patterns.” NAS REPORT, *supra* note 2, at 38. Included in the first classification are DNA analysis, toxicology, and drug analysis. *Id.* Disciplines with a basis in expert interpretations have the goal of determining a common source for patterns observed in, but not limited to, fingerprints, writing samples, and toolmarks. See *id.*

<sup>17</sup> In what may be a simplistic explanation of the distinction, the lab disciplines also bring quantitative results that have a more objective nature in what they represent. Jessica D. Gabel, *Realizing Reliability in Forensic Science from the Ground Up*, 104 J. CRIM. L. & CRIMINOLOGY 283, 291 (2014). DNA results, for example, are reported in the “all-important statistical representation of the likelihood of a random match based on population genetics—i.e., the pervasive ‘1 in n billion’ number.” *Id.* Consequently, the lab-based forensic disciplines embody a more analytical approach which makes them more reliable. *Id.* This can be compared to the more subjective nature of “pattern identification” disciplines, which produce qualitative, non-numeric

reliable. This specious logic leads to judicial acceptance (and in some cases judicial notice), which is an important source in legitimating forensic science.<sup>18</sup> That translates to a belief system that perpetuates the perception that forensic evidence is scientific and reliable because courts said it was so.

This belief system is further sustained by the steady stream of alluring yet fictional representations of forensic science in crime-solving serials and popular media.<sup>19</sup> Packaging the complexities of forensic analysis in the digestible form of exaggerated technology and concrete science, popular television perpetuates unrealistic expectations for modern forensic techniques and obscures their actual capabilities and limitations.<sup>20</sup> These misinformed fictions exert significant influence over public perceptions and inadvertently permeate the justice system, creating the so-called “CSI-effect.”<sup>21</sup> The result is disappointing in a legal system that has tried time and again to prevent junk science from infecting cases and sending innocent people to prison. In 1993, the United States Supreme Court issued its landmark opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,<sup>22</sup> a case aimed directly at stemming the tide of junk science. In *Daubert*, the Court eliminated the old *Frye* test<sup>23</sup> and fashioned a new reliability test for the admissibility of expert testimony, one that incorporated the significance of error rates and peer review in a given methodology and assigned a “gatekeeping” role to the judge to effectively screen the evidence and determine its admissibility.<sup>24</sup> Some viewed *Daubert* as opening the floodgates to all manner of expert testimony, but the Court seemed to routinely enhance and refine *Daubert* over the next several years.<sup>25</sup> By 2000, the Court suggested that

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results. *Id.* That being said, even DNA analysis is subject to human error based on the interpretation. *Id.*

<sup>18</sup> See, e.g., *United States v. Martinez*, 3 F.3d 1191 (8th Cir. 1993) (holding that courts are allowed to take judicial notice of reliability of general theory and techniques of DNA profiling).

<sup>19</sup> See Jessica D. Gabel, *Forensiphilia: Is Public Fascination with Forensic Science a Love Affair or Fatal Attraction?*, 36 NEW ENG. J. ON CRIM. & CIV. CONFINEMENT 233, 237–40 (2010).

<sup>20</sup> *Id.*

<sup>21</sup> *Id.* at 240–46.

<sup>22</sup> 509 U.S. 579 (1993).

<sup>23</sup> In 1923, James A. Frye appealed his conviction of second-degree murder to the United States Court of Appeals for the District of Columbia Circuit. The court affirmed the conviction and excluded expert evidence concerning lie detector results from an early predecessor of the polygraph. *Frye v. United States*, 293 F.1013, 1014 (D.C. Cir. 1923); see *infra* Section I.A.1.

In subsequent cases, this became known as the *Frye* test or the “general acceptance” rule, and was viewed as a requirement for peer review of scientific evidence admitted into court. See Thomas Lyons, *Frye, Daubert and Where Do We Go from Here?*, 45 R.I.B.J. 5 (1997).

<sup>24</sup> See Giannelli, *supra* note 6.

<sup>25</sup> See, e.g., *Kuhmo Tire Co. v. Carmichael*, 526 U.S. 137 (1999); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997).

*Daubert* served as an “exacting standard.”<sup>26</sup> That same year, *Daubert* was codified within the language of Rule 702 of the Federal Rules of Evidence.<sup>27</sup>

One of the unforeseen consequences in the 20-plus years of the *Daubert* regime is its unequal application in civil versus criminal cases.<sup>28</sup> To be blunt: expert testimony in civil cases is habitually and stringently assessed under the *Daubert* factors. The same cannot be said of expert testimony in criminal cases. Rather, criminal cases favor admissibility over a rigorous assessment of reliability (the so-called “weight vs. admissibility” argument).<sup>29</sup>

This is not an Article that seeks to equalize the admissibility standards between civil and criminal cases.<sup>30</sup> Rather, this Article argues that the admissibility of scientific evidence in criminal cases should be *at least* as stringent as what is applied in civil cases. Of course, that begs the question

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<sup>26</sup> Weisgram v. Marley Co., 528 U.S. 440, 455 (2000).

<sup>27</sup> In 1975, Congress enacted the Federal Rules of Evidence, Rule 702 of which governs expert testimony. In 2000, Rule 702 was amended in an attempt to codify and structure elements embodied in the “*Daubert* trilogy” of *Daubert*, *Joiner*, and *Kuhmo*, and the rule then read:

Rule 702. Testimony by Experts

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 upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

FED. R. EVID. 702 (2000) (amended 2011).

In 2011, Rule 702 was again amended to make the language clearer. The rule now reads:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

FED. R. EVID. 702.

Some court opinions still cite to pre-2000 opinions in determining the scope of *Daubert*, but any earlier judicial rulings that conflict with the language of amended Rule 702 are no longer good precedent.

<sup>28</sup> Giannelli, *supra* note 6.

<sup>29</sup> *FRE 401 and Weight vs. Admissibility of the Evidence*, FED. EVIDENCE REV.: EDITOR’S BLOG (Apr. 30, 2010), <http://federalevidence.com/blog/2010/april/fre-401-and-weight-vs-admissibility-evidence>.

<sup>30</sup> That would require pages upon pages that compare the competing norms of civil and criminal cases, including the relevant burdens of proof and the specter of “hired guns” in civil cases. For a much better articulation of those issues, see Deirdre Dwyer, (*Why*) *Are Civil and Criminal Expert Evidence Different?*, 43 TULSA L. REV. 381 (2007) and Paul Giannelli, *The Supreme Court’s “Criminal” Daubert Cases*, 33 SETON HALL L. REV. 1071 (2003).

whether that necessary stringency is perfectly embodied by the *Daubert*/Rule 702 system or something different. I am not sure I can answer that question, but I am certain that jurisdictions that have accepted *Daubert* in the civil arena resist its application in the criminal context. For better or worse, *Daubert* is the best available standard for scientific evidence. It should be uniformly adopted despite its imperfections.

At a minimum, “criminalizing” *Daubert* once and for all would remove the subpar treatment that expert testimony receives in criminal practice and written procedure. The reliability of scientific evidence in criminal cases depends upon implementing and enforcing comparable standards, and there are new standards and research that have not yet seen the light of day in court. Reliability is the bedrock of admissibility. As forensic science begins to adopt new and more rigorous research and scientific methods, the legal system should correspondingly scrutinize that research and apply evidentiary rules consistently and predictably to that evidence.

Part II discusses the background of expert testimony and focuses on the case law and statutory guidelines set out for expert testimony in Florida, Georgia, West Virginia, and at the federal level. Part III attempts to reconcile the disparate treatment scientific evidence rules in criminal cases and addresses prejudice, cost, and constitutional concerns. Finally, Part IV proposes raising the standard for expert testimony in criminal cases.

## II. BACKGROUND

Expert testimony sometimes functions as the “rock star” of a trial, and it has been that way for a number of years. Even at the federal level, however, expert testimony has not always been subject to the qualifications set out by Federal Rule of Evidence 702<sup>31</sup> (“Rule 702”) and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*<sup>32</sup> In fact, an expert rendering an opinion in court was not

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<sup>31</sup> Federal Rule of Evidence 702 governs expert testimony. FED. R. EVID. 702. The rule states:

- A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:
- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact understand the evidence or to determine a fact in issue;
  - (b) the testimony is based on sufficient facts or data;
  - (c) the testimony is the product of reliable principles and methods; and
  - (d) the expert has reliably applied the principles and methods to the facts of the case.

*Id.*

<sup>32</sup> 509 U.S. 579, 597 (1993) (holding that general acceptance is not a precondition of the admissibility of scientific evidence under the Rules, and that the judge serves as the gatekeeper to the reliability and relevance of the experts testimony).

disputed until 1782 in *Folkes v. Chadd*.<sup>33</sup> In *Folkes*, several experts appeared before a jury to testify as to what caused the decay of a harbor on the Norfolk coast of England.<sup>34</sup> The court excluded one Newtonian philosopher's<sup>35</sup> expert testimony as a "matter of opinion, which could be no foundation for the verdict of the jury."<sup>36</sup>

On appeal, the case came before the now famous Lord Mansfield, Chief Justice of the King's Bench.<sup>37</sup> Lord Mansfield reversed the decision of the lower court, finding the expert opinion proper evidence:

[T]he whole case is a question of opinion, from the facts agreed upon. . . . It is objected that [the expert] is going to speak, not as to facts, but as to opinion. That opinion, however, is deduced from facts which are not disputed—the situation of banks, the course of tides and winds, and the shifting of sands. . . . [The expert] understands the construction of harbours [sic], the causes of their destruction, and how remedied. In matters of science no other witnesses can be called. . . . The question then depends on the evidence of those who understand such matters; and when such questions come before me, I always send for some of the brethren of Trinity House. I cannot believe that where the question is, whether a defect arises from a natural or an artificial cause, the opinions of men of science are not to be received. . . . The cause of the decay of the harbor is also a matter of science, and still more so, whether the removal of the bank can be beneficial. Of this, such men as [this expert] can alone judge. Therefore we are of opinion that his judgment, formed on facts, was very proper evidence.<sup>38</sup>

This decision by Lord Mansfield served as the backbone of expert testimony in the Anglo-American legal system.<sup>39</sup>

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<sup>33</sup> *Folkes v. Chadd* (1782) 99 Eng. Rep. 589, 3 Doug. 157; see also Tal Golan, *Revisiting the History of Scientific Expert Testimony*, 73 BROOK. L. REV. 879, 887 (2008).

<sup>34</sup> Golan, *supra* note 33, at 887.

<sup>35</sup> Newtonian philosophy involves the study of philosophy combined with experimental and mathematical methods for the study of nature. See generally Andrew Janiak, *Newton's Philosophy*, STAN. ENCYCLOPEDIA PHIL., <http://plato.stanford.edu/entries/newton-philosophy/> (last updated May 6, 2014).

<sup>36</sup> Golan, *supra* note 33, at 887 (quoting *Folkes*, 99 Eng. Rep. at 590).

<sup>37</sup> *Id.* at 897.

<sup>38</sup> *Id.* (quoting *Folkes*, 99 Eng. Rep. at 590).

<sup>39</sup> See *id.*



A. *Case Law: Frye, Daubert, and Harper*

While Americans were influenced by the rulings and admissibility relating to experts in England, that influence did not actually set standards for expert testimony in the United States.<sup>40</sup> The only requirement was that experts be qualified to speak as experts who possess special training and experience in the subject in question.<sup>41</sup> Other qualifications and the admissibility of the expert's testimony were left up to the judge.<sup>42</sup> Furthermore, courts were not united on whether experts could testify to the ultimate issue in a case, or rely on scientific treatises.<sup>43</sup> It was not until 1923 in *Frye v. United States*<sup>44</sup> that a new standard was born. The following section tracks the development of *Frye*'s "general acceptance" test and the *Daubert* test that superseded it, and sets forth the key challenges facing *Daubert*'s application today, including its markedly different application in criminal and civil cases.

1. The *Frye* Test

James Frye was accused of murder and sought to introduce expert testimony relating to a lie detector test (a systolic blood pressure test) at trial.<sup>45</sup> The test asserted that the blood pressure of the test taker would change according to the test taker's emotions.<sup>46</sup> Mr. Frye's counsel offered the test designer as an expert to discuss the results of the test, but the lower court denied tendering the test designer as an expert.<sup>47</sup> The appeals court affirmed this decision stating, "while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, 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."<sup>48</sup> What is known today as the *Frye* test is simply expert testimony based on peer-review, principles and methods generally accepted in the scientific community.<sup>49</sup>

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<sup>40</sup> *Id.* at 917 ("[N]either system was able to lay down a precise rule for determining who was and who was not a competent expert.").

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*

<sup>43</sup> *Id.* at 921–22.

<sup>44</sup> 293 F. 1013 (D.C. Cir. 1923).

<sup>45</sup> *Id.* at 1013.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.* at 1014.

<sup>48</sup> *Id.*

<sup>49</sup> See *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 584 (1993).

*Frye* also happens to be one of the most vague and ambiguous decisions in American jurisprudence.<sup>50</sup> The District of Columbia Court of Appeals considered *Frye*'s argument—that changes in blood pressure demonstrated whether the test subject was prevaricating—but ultimately rejected the evidence in cryptic fashion:

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, 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.<sup>51</sup>

The *Frye* court held that the expert's opinion must be derived from "a thing," presumably to sufficiently remove pure opinion testimony. The "thing" requirement is ostensibly related to the "well recognized scientific principle[s] or discoverie[s]" of the previous sentence. To survive a challenge, the proposed testimony must be established in "demonstrable" science, as opposed to that which might be "experimental."<sup>52</sup>

The *Frye* decision did not receive much traction and remained a sleeping giant for several decades. From 1923 to 1948, only eight federal and five state court criminal cases cited it.<sup>53</sup> From 1948 to 1973, *Frye* was cited 55 times in federal criminal cases and 29 times in state criminal cases.<sup>54</sup> Coincidentally (probably not), just before the adoption of the Rules in 1975, courts' citations to *Frye* increased dramatically.<sup>55</sup> Nearly "every federal and state court addressing the general acceptance standard adopted it."<sup>56</sup>

Nonetheless, *Frye* did not present itself in a civil case until 1984.<sup>57</sup> Interestingly, though the Supreme Court cast doubt on *Frye*'s vitality in criminal

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<sup>50</sup> See Lyons, *supra* note 23.

<sup>51</sup> *A Simplified Guide to Forensic Evidence Admissibility & Expert Witnesses: The Frye Standard*, FORENSIC SCI. SIMPLIFIED, <http://www.forensicsciencesimplified.org/legal/frye.html> (last visited Nov. 3, 2016).

<sup>52</sup> *Frye*, 293 F. at 1014.

<sup>53</sup> David L. Faigman et al., *Check Your Crystal Ball at the Door, Please: Exploring the Past, Understanding the Present, and Worrying about the Future of Scientific Evidence*, 15 CARDOZO L. REV. 1799, 1808 n.25 (1994).

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> Lyons, *supra* note 23.

<sup>57</sup> *Id.*

cases, it never rendered a decision interpreting the *Frye* rule.<sup>58</sup> Courts, commentators, and legal scholars have been mystified by *Frye* and have attempted to decode the true meaning of “general acceptance.”<sup>59</sup> Others have had difficulty defining the “particular field” or “relevant scientific community” that determines if the “thing” is generally accepted.<sup>60</sup>

Professor Paul Giannelli has summarized the arguments for and against the *Frye* rule as a method for ensuring reliability of scientific evidence.<sup>61</sup> The perceived benefit of *Frye* is that it confirms that those most qualified are the ones who assess the general validity of a scientific method and that they carry “a determinative voice.”<sup>62</sup> The argument against using the *Frye* rule is that it may frustrate or foreclose the use of innovative techniques.<sup>63</sup> At the very least, *Frye* should promote uniformity as a singular, short rule, but the ongoing interpretation of so few words essentially swallows any simplicity in its formulation.

Thus, *Frye* leaves many questions unanswered. Who determines the relevant scientific community? How does the court define the relevant scientific community? Does the theory or technique cross into multiple disciplines, or is it an emerging field? How mainstream should a theory or technique be before it becomes relevant? Is there a way to quantify general acceptance? Must the scientific community accept both the validity of an underlying theory and the reliability of the technique? The proof of general acceptance is not straightforward. How much weight do we give to scientific journals, treatises, and other literature? When can courts take judicial notice, and should they? Is *Frye* limited to “novel” scientific evidence or can it be expanded to all scientific evidence? Rather than promote predictability and uniformity, the *Frye* test became susceptible to inconsistent judicial application, manipulation, and constant recalibration of *Frye*’s elements.<sup>64</sup>

## 2. The *Daubert* Standard

*Frye*’s shortcomings culminated in the decision by the Supreme Court of the United States in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*<sup>65</sup> *Daubert* began as a trial about a birth defect allegedly caused by a prescription drug, but it became a case that would completely change the face of scientific evidence in

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<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*; see also Giannelli, *supra* note 6.

<sup>62</sup> Lyons, *supra* note 23.

<sup>63</sup> See *id.*

<sup>64</sup> *Id.*

<sup>65</sup> 509 U.S. 579 (1993).

courts.<sup>66</sup> The expert testimony offered by the plaintiffs was based on unpublished studies regarding causation between the drug and the birth defects, and the lower court determined those studies fell short of the “general acceptance” standard set out in *Frye*.<sup>67</sup> But in the 70-year period between *Daubert* and *Frye*, the Rules were adopted—particularly Rule 702—and the Court decided that the new rules superseded the *Frye* test.<sup>68</sup> The *Daubert* Court held that when federal courts apply Rule 702 to expert testimony, the court should consider many factors in assessing reliability,<sup>69</sup> and the judge’s role in assessing these factors is to serve as the gatekeeper of reliability and relevance.<sup>70</sup> The assessment is three-pronged: (1) “courts are to consider the ‘validity’ or ‘reliability’ of the evidence in question”; (2) “its degree of ‘fit’ to the facts and issues in the case”; and (3) “the risks or dangers that the evidence will confuse the issues or mislead the jury.”<sup>71</sup> In 1999, the Court expanded *Daubert* to all expert testimony, not just scientific testimony, in *Kumho Tire Co. v. Carmichael*.<sup>72</sup>

But this decision left a gaping hole as to what evidentiary standard should succeed *Frye*. The Court said Rule 702 “clearly contemplates some degree of regulation” of the content of expert testimony and an assessment of its reliability. The expert is limited to his or her “scientific . . . knowledge.”<sup>73</sup> Quoting *Webster’s Dictionary*, the Court said knowledge “applies to any body of known facts or any body of ideas inferred from such facts or accepted as truths on good grounds.”<sup>74</sup> It also quoted from the amicus curia brief of the American Association for the Advancement of Science and the National Academy of Sciences (the same National Academy of Sciences that would later release the

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<sup>66</sup> *Id.* at 582.

<sup>67</sup> *Id.* at 583–84.

<sup>68</sup> *Id.* at 588 (“Nothing in the text of this Rule establishes ‘general acceptance’ as an absolute prerequisite to admissibility.”); see also FED. R. EVID. 702 (1975) (amended 2011) (“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.”).

<sup>69</sup> *Daubert*, 509 U.S. at 593–94. The court provided a non-exclusive list of ways to determine whether the evidence is reliable: (1) “whether it can be (and has been) tested”; (2) “whether the theory or technique has been subject to peer review and publication”; (3) “the known or potential rate of error”; (4) general acceptance in the community; and (5) “the existence and maintenance of standards controlling the technique’s operation.” *Id.*

<sup>70</sup> *Id.* at 597.

<sup>71</sup> CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, FEDERAL EVIDENCE § 7:10 (4th ed. 2015).

<sup>72</sup> See *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999) (“We conclude that *Daubert*’s general holding—setting forth the trial judge’s general ‘gatekeeping’ obligation—applies not only to testimony based on ‘scientific’ knowledge, but also to testimony based on ‘technical’ and ‘other specialized’ knowledge.”); see also MUELLER & KIRKPATRICK, *supra* note 71.

<sup>73</sup> *Daubert*, 509 U.S. at 590.

<sup>74</sup> *Id.*

scathing report on the state of the forensic science): “Science . . . represents a process for proposing and refining theoretical explanations about the world that are subject to further testing and refinement.”<sup>75</sup> Therefore, scientific knowledge is an assertion or inference derived by the scientific method.<sup>76</sup>

The Court noted Rule 702 requires that expert testimony “assist the trier of fact.”<sup>77</sup> This language “goes primarily to relevance,” and the Court adopted Judge Edward R. Becker’s description of this as a “fit” requirement.<sup>78</sup> Scientific testimony might be fit for some purposes but not others.<sup>79</sup> For example, bullet wounds in a body may be valid scientific evidence about where the perpetrator was standing, but not about whether two people were holding that gun at the same time when the weapon was fired.<sup>80</sup> The Court also observed that the Rule 702 “helpfulness” standard requires a defensible scientific nexus to the relevant issue.<sup>81</sup>

To assist in the determination of the underlying methodology’s scientific validity and applicability to the case, the Court provided four nonexclusive “factors” for guidance.<sup>82</sup> The *Daubert* criteria mirror the factors articulated in *United States v. Williams*<sup>83</sup> and *United States v. Downing*<sup>84</sup>:

- (1) Whether the expert’s theory or technique can be (and has been) tested;
- (2) Whether the theory or technique has been subjected to peer review and publication;
- (3) Whether the theory or technique has an acceptable known or potential rate of error and the existence and maintenance of standards controlling the technique’s operation; and

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<sup>75</sup> *Id.*

<sup>76</sup> *Id.*

<sup>77</sup> *Id.* at 591.

<sup>78</sup> *Id.*

<sup>79</sup> *See id.*

<sup>80</sup> In Mississippi, 13-year-old Tyler Edmonds was tried and convicted (along with his sister) for the murder of his brother-in-law. Joneil Adriano, *Pathologist’s Work Raises Questions*, CNN: ANDERSON COOPER 360 (Aug. 21, 2009, 10:00 PM) <http://ac360.blogs.cnn.com/2009/08/21/pathologists-work-raises-questions/>. The medical examiner claimed to be able to determine from the bullet wounds that Edmonds had been holding the gun simultaneously with his sister at the time the trigger was pulled. *Id.* On appeal to the Mississippi Supreme Court, this testimony was called “speculative” and “scientifically unfounded” by the court. Upon retrial in 2008, absent that testimony, Edmonds was acquitted. *Id.*

<sup>81</sup> *Daubert*, 509 U.S. at 591–92. The Court did not explain why it was necessary to incorporate a relevance standard into Rule 702 in addition to that in Rules 401–03.

<sup>82</sup> *Id.* at 593–94.

<sup>83</sup> 583 F.2d 1194 (2d Cir. 1978).

<sup>84</sup> 753 F.2d 1224 (3d Cir. 1985).

(4) Whether the theory or technique has attained “general acceptance.”<sup>85</sup>

The Court explained that peer review and publication, while not “dispositive,” are relevant.<sup>86</sup> Moreover, a “known technique which has been able to attract only minimal support within the [relevant scientific] community” may be viewed skeptically.<sup>87</sup>

In defining the role of the judge, the Court assigned a “gatekeeping” function: “[t]he trial judge must ensure that any and all scientific testimony or

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<sup>85</sup> *Id.* Note that on remand, the Ninth Circuit added a fifth *Daubert* factor that did not make it into Rule 702. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311, 1317 (9th Cir. 1995). As the Ninth Circuit described it, the fifth factor for testing the reliability of expert testimony “is whether the experts are proposing to testify about matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying.” *Id.* This factor examines “the impartiality or neutrality of the expert,” and whether “outside of the world of litigation,” the expert or the industry has recognized the methodology. *Id.* at 1317–18. The thought here is that an expert whose findings flow from existing research or other work in a field is less likely to be biased toward a particular conclusion by a fee. *Id.* at 1317. In criminal cases that actually entertain a more thorough *Daubert* application, this factor is often left in the dust. One federal court described this factor as one of the two primary criteria for establishing the reliability of scientific expert testimony. *Lauzon v. Seneco Prods., Inc.*, 270 F.3d 681 (8th Cir. 2001). Yet in forensic science, it is thought to have limited application sciences because the techniques do not have any nonjudicial applications.

But this is actually a very important factor in forensic science cases. The issue is not the fee, but the contextual bias. Within the inherent subjectivity of forensic science comes a certain level of influence from “contextual” surroundings. Many factors could create such a context around the examiner’s analysis. Forensic experts—including fingerprint examiners—often have access to information surrounding a case that goes outside of the realm of information needed to conduct their forensic analysis. This includes details about the crime and the suspect, such as prior convictions or social affiliations or even that the potential fingerprint match is critical as it will be the only strong evidence in the case.

This confirmation bias is the likely result of a mixture of peer pressure—in that the original examiner is likely someone they know in the field—and expectation bias. *See generally* Itiel E. Dror et al., *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 FORENSIC SCI. INT’L 74 (2006). There are no current procedures to protect examiners from receiving extraneous contextual information that could have an unconscious influence on the examiner’s findings. *Id.*

Moreover, during the verification stage (such as in fingerprint examination) in which the additional examiner determines the appropriateness of a decision is when confirmation or contextual bias may occur. *See* Jennifer L. Mnookin, *The Courts, the NAS, and the Future of Forensic Science*, 75 BROOK. L. REV. 1209, 1218 (2010). In the majority of laboratories, the verification step is conducted by an examiner who is both informed of the original examiner’s conclusion before even beginning their own analysis and the facts surrounding the case. *Id.* The verifying examiner usually understands that they are verifying a conclusion reached by another examiner that they usually know and that the conclusion the first examiner came to was that the prints were a match. *Id.*

<sup>86</sup> *Daubert*, 509 U.S. at 594.

<sup>87</sup> *Id.* (quoting *United States v. Downing*, 753 F.2d 1224, 1238 (3d Cir. 1985)).

evidence admitted is not only relevant, but reliable.”<sup>88</sup> This requires “a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts” of the case.<sup>89</sup> This preliminary assessment is what I call the three-footed stool of reliability: (1) is the method *reliable*? (2) was it *reliably* applied to this particular case; and (3) is this expert a *reliable* expert? Knock one of them out and the stool tumbles.

The Court also addressed two collateral concerns raised by interested parties.<sup>90</sup> Some worried that rejecting *Frye*’s general acceptance test would result in a “free-for-all” of “absurd and irrational pseudoscientific assertions.”<sup>91</sup> The Court was sure that effective cross-examination, presentations of contrary evidence, pre-trial motions, and proper jury instructions will refute “shaky but admissible evidence.”<sup>92</sup> Here is where the Court’s logic is flawed: Relying on the adversary nature of a trial to identify and undermine unreliable science should never be a solution to a problem. And the notion that a court would dispose of scientifically unsupported cases under Rules 56 or 50(a) before they get to the jury is fantastic, except that you cannot do that in a criminal case.<sup>93</sup>

The Court rejected the concerns of the petitioners and certain amici that the gatekeeping role for the trial judge will “sanction a stifling and repressive scientific orthodoxy” and be “inimical to the search for truth.”<sup>94</sup> The Court said there are important differences between the quests for truth in the courtroom and in the laboratory.<sup>95</sup> Science may benefit from hypotheses that ultimately prove incorrect.<sup>96</sup> “Conjectures that are probably wrong are of little use, however, in the project of reaching a quick, final, and binding legal judgment—often of great consequence—about a particular set of events in the past.”<sup>97</sup> The Court characterized this as the balance struck by the Rules.<sup>98</sup> It reversed and remanded because the district court and circuit court had focused almost exclusively on the “general acceptance” standard.<sup>99</sup>

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<sup>88</sup> *Id.* at 589.

<sup>89</sup> *Id.* at 592–93.

<sup>90</sup> *Id.* at 595.

<sup>91</sup> *Id.*

<sup>92</sup> *Id.* at 596.

<sup>93</sup> FED. R. CIV. P. 50(a), 56.

<sup>94</sup> *Daubert*, 509 U.S. at 596.

<sup>95</sup> *Id.* at 596–97.

<sup>96</sup> *Id.* at 597.

<sup>97</sup> *Id.*

<sup>98</sup> *Id.*

<sup>99</sup> *Id.* at 597–98.

Chief Justice William Rehnquist wrote an opinion concurring in part and dissenting in part, in which an unlikely ally, Justice John Paul Stevens, joined.<sup>100</sup> Chief Justice Rehnquist agreed that the Federal Rules served as *Frye*'s death sentence, but he objected to the majority's criteria as "vague and abstract"—criticism that would apply equally to *Frye*.<sup>101</sup> Rehnquist concluded with concerns over whether trial judges would become "amateur scientists" in order to comport with their gatekeeping duties.<sup>102</sup>

Rehnquist issued an important caution given that there are concerns about how much training judges and lawyers should receive on science. The Federal Judicial Center publishes an excellent *Reference Manual on Scientific Evidence*<sup>103</sup> and the *NAS Report* called for education for the judiciary and attorney components of the criminal justice system.<sup>104</sup>

This is not to say that *Daubert* is the second coming. Comparing *Frye* to *Daubert*, the decisions do have common ground beyond "general acceptance."<sup>105</sup> One helpful aspect of *Frye* was its deference to the consensus of the scientific community to reach reliability.<sup>106</sup> *Frye* also intended to allow valid scientific evidence and exclude the "experimental."<sup>107</sup> *Daubert* perhaps injected unforeseen (and unending) debate as to the testability, error rate, and existence of standards pertaining to a scientific theory or technique. But scientific evidence must be reliable—that's the bedrock of Rule 702.<sup>108</sup> If this is to mean excluding "authentic insights and innovations," then it should apply with equal force to the science we deem familiar but that is otherwise the product of subjective interpretation, such as forensic science.<sup>109</sup>

### 3. Even *Daubert* Has Its Flaws

Admittedly, *Daubert* presents its own snags in the application. If science is, as the Court quotes, "a *process* for proposing and refining theoretical explanations about the world that are subject to further testing and refinement," then testability, error rate, standards, and peer review reflect the accord of the scientific community in accepting that the theory or technique is valid.<sup>110</sup> The

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<sup>100</sup> *Id.* at 598 (Rehnquist, C. J., concurring in part and dissenting in part).

<sup>101</sup> *Id.*

<sup>102</sup> *Id.* at 600–01.

<sup>103</sup> See FED. JUDICIAL CENT., REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (2011).

<sup>104</sup> See NAS REPORT, *supra* note 2.

<sup>105</sup> See *Frye v. United States*, 293 F. 1013, 1013 (D.C. Cir. 1923).

<sup>106</sup> *Id.* at 1014.

<sup>107</sup> *Id.* at 1013.

<sup>108</sup> FED. R. EVID. 702(c).

<sup>109</sup> *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993).

<sup>110</sup> *Id.* at 590.



Carnegie Commission on Science, Technology, and Government, which submitted an amicus brief in *Daubert*, noted that “for a theory on which an expert relies to be deemed ‘scientific’ (1) it must set forth a hypothesis that is capable of being proven false through observation or experiment, and (2) the data produced through this testing must be capable of replication.”<sup>111</sup> In addition, the American Association for the Advancement of Science and the National Academy of Sciences in their own amici brief said: “A new theory or explanation must generally survive a period of testing, review, and refinement before achieving scientific acceptance. This process does not merely reflect the scientific method; it is the scientific method.”<sup>112</sup> Sixteen years later, the *NAS Report* would return to that exact premise.<sup>113</sup>

The *Daubert* factors—while neither exclusive nor exhaustive—are interdependent criteria.<sup>114</sup> If a scientific theory is testable, has a known error rate, and is subjected to professional standards and peer review, then the general scientific community should accept it.<sup>115</sup> This makes sense. A theory may ultimately flunk the general acceptance factor even if it meets the others. For example, we can have a hypothesis that the sun revolves around the earth. This is testable, would be subject to peer review, and would have a 100% error rate. But, at the end of the day, it is just plain nonsense. Similarly, a theory may not meet the other *Daubert* criteria, but it may achieve general acceptance. Take hair microscopy or bite mark analysis. Both have been under fire as a means of identification, but for decades they were generally accepted valid means of a positive identification.<sup>116</sup> Thus, the scientific community that has embraced the theory may well be just a biased group of partisans.

Much like *Frye*, the “flexibility” of the *Daubert* factors makes them vulnerable to manipulation. This largely is a construct of civil cases, but that does not mean it has not happened in criminal cases.<sup>117</sup> Just about any scientific article can likely find a home for publication, so one has to probe deeply to determine the rigors of the peer review. Moreover, accreditations and certifications are no guarantee of proficiency. An expert must be thoroughly vetted because,

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<sup>111</sup> Brief of Carnegie Commission on Science, Technology, & Government as Amici Curiae Supporting Neither Party, *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 869 (1995) (No. 92–102).

<sup>112</sup> Brief of American Ass’n for the Advancement of Science & the National Academy of Sciences as Amici Curiae in Support of Respondent, *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 869 (1995) (No. 92–102).

<sup>113</sup> NAS REPORT, *supra* note 2.

<sup>114</sup> See *Daubert*, 509 U.S. at 579.

<sup>115</sup> *Id.*

<sup>116</sup> See, e.g., Spencer S. Hsu, *FBI Admits Flaws in Hair Analysis over Decades*, WASH. POST (Apr. 18, 2015), [https://washingtonpost.com/local/crime/fbi-overstated-forensic-hair-matches-in-nearly-all-criminal-trials-for-decades/2015/04/18/39c8d8c6-e515-11e4-b510-962fcfab310\\_story.html](https://washingtonpost.com/local/crime/fbi-overstated-forensic-hair-matches-in-nearly-all-criminal-trials-for-decades/2015/04/18/39c8d8c6-e515-11e4-b510-962fcfab310_story.html).

<sup>117</sup> See Lyons, *supra* note 23.

ultimately, what a judge or jury hears can sound incredibly impressive even if its all poppycock. This requires thorough investigation on the part of the attorneys—but it is an advantage *Daubert* permits that *Frye* necessarily does not. For example, let us look at fingerprint analysis. The process of forensic fingerprint identification fails to meet the peer review and publication standards.<sup>118</sup> The published literature on fingerprinting is overwhelmingly about how to classify sets of 10 inked fingerprints; how to chemically process and otherwise “develop” (that is, make visible) latent fingerprints; and how friction ridges are formed during embryonic development.<sup>119</sup> These topics are of marginal relevance to the method of forensic fingerprint identification.

Testability presents challenges as well. A shortcoming of *Daubert* is that it merely requires that the theory be “testable,” not that it actually be tested. Returning to fingerprint identification: the fingerprint community has yet to develop an adequate standard for what constitutes a fingerprint “match.”<sup>120</sup> It is well understood that similarities in location, type, and orientation of what are called “ridge characteristics” lead fingerprint examiners to conclude that a print (be it patent or latent) and an inked print from a known source come from the same finger.<sup>121</sup>

It is difficult—and perhaps currently impossible—to test how many of these similarities, or to what degree of similarity, warrants this conclusion. Different examiners will arrive at different ideas about the characteristics they have in agreement and how many of those are sufficient for an identification.<sup>122</sup> It should be noted that this conclusion does not have a probability attached to it. Rather it is presented as an unqualified opinion that there is a “match” or an “identification” between a known print and an unknown print does not come close to being standardized. Such a statement asserted as fact is one that has never been established as true on the basis of any kind of empirical testing or rigorous theory. The use of the term “match” or “uniqueness” has never been demonstrated to be true, and remains unsupported by any scientific testing, but believed nonetheless. Thus, one might guess that fingerprint examination would fail a *Daubert* analysis. It does not, but there have been several close calls.<sup>123</sup>

The dearth of testable research and empirical evidence on fingerprint identification can lead us to conclude that: (1) there is no clearly articulated standard for what constitutes a fingerprint match, and (2) the standard, whatever

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<sup>118</sup> See Jennifer L. Mnookin, *The Validity of Latent Fingerprint Identification: Confessions of a Fingerprinting Moderate*, 7 *LAW, PROBABILITY & RISK*, no. 2, at 127, 129 (2008).

<sup>119</sup> *Id.*

<sup>120</sup> *Id.*

<sup>121</sup> *Fingerprint*, in *WORLD OF FORENSIC SCIENCE* 293 (K. Lee Lerner & Brenda Wilmoth Lerner eds., 2005).

<sup>122</sup> *Id.* at 294–95.

<sup>123</sup> See generally *United States v. Llera Plaza*, 188 F. Supp. 2d 549 (E.D. Pa. 2002); *United States v. Merritt*, No. IP 01–081–CR–01, 2002 WL 1821821, at \*1 (S.D. Ind. June 26, 2002).

it is, is not uniform, across the United States, and around the world. *Daubert* is applicable to not only “scientific” testimony, but to all expert testimony, which includes the technical applications of forensic science.<sup>124</sup> The criminal justice system should permit *Daubert* to exist in practice so as “to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.”<sup>125</sup> *Daubert*’s reliability standards require more than merely “taking the expert’s word for it,” which currently carries a lot of weight when the subject is forensic science.<sup>126</sup> *Daubert* requires greater scrutiny of all expert testimony to safeguard cases from junk science and unreliable opinion testimony.<sup>127</sup>

Because *Daubert* hearings for criminal cases tend to receive short shrift,<sup>128</sup> it is apparently sufficient that the expert witness say his theory is testable without an actual requirement that it be tested (i.e., no two fingerprints are alike). By its language, *Daubert* should require substantial testing by independent entities not involved in the forensic process.<sup>129</sup> Moreover, what evidence of an error rate of standards demonstrates reliability? Who verifies the error rate or establishes the standards?

This *Daubert* dichotomy cannot be ignored. I agree that expert evidence in civil cases takes on a markedly different scope—causation testimony becomes the crux of the case and deep-pocket corporate defendants have the time, money, and an abundance of attorneys to do everything possible to pick the scientific evidence apart piece by piece. The same cannot be said of an underfunded and overworked prosecutor or criminal defense attorney. They barely keep their heads above water, and they lack the time and energy to argue over source attribution in *Daubert* hearings. Bottom line: scientific evidence in criminal and civil cases receives markedly different treatment. But does it have to be? The federal system makes it different in practice. The Georgia system makes it different by statute and case law.

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<sup>124</sup> See *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147 (1999).

<sup>125</sup> *Id.* at 152.

<sup>126</sup> FED. R. EVID. 702, advisory committee notes.

<sup>127</sup> See generally Lyons, *supra* note 23.

<sup>128</sup> See D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?*, 64 ALA. L. REV. 99, 104–05 (2000) (Between the *Daubert* opinion and 2000, there were 649 federal district court *Daubert* opinions; 584 of those opinions were in non-criminal cases).

<sup>129</sup> Gabel, *supra* note 17, at 339–40.

#### 4. Georgia's *Harper* Standard

Peer review and general acceptance became known as the *Frye* test, which held its place in the courts (federal and state) for many years.<sup>130</sup> In 1982, this changed in the state of Georgia during the murder trial *Harper v. State*.<sup>131</sup> The defendant Michael Earl Harper was convicted and sentenced to life in prison for the murder of George Mercer, IV.<sup>132</sup> At the trial level, the defendant sought to offer expert testimony from a psychiatrist but was denied.<sup>133</sup> The trial court denied the testimony because the psychiatrist's testing methods were not established as reliable.<sup>134</sup> On appeal, the Georgia Supreme Court upheld the decision to exclude the expert's opinion, even if it had been peer reviewed and accepted in the scientific community.<sup>135</sup> The Georgia court stated:

After much consideration, we conclude that the *Frye* rule of "counting heads" in the scientific community is not an appropriate way to determine the admissibility of a scientific procedure . . . . We hold that it is proper for the trial judge to decide whether the procedure or technique in question has reached a scientific stage of verifiable certainty, . . . whether the procedure "rests upon the laws of nature." . . . The significant point is that the trial court makes this determination based on the evidence available to him rather than by simply calculating the consensus in the scientific community.<sup>136</sup>

This is certainly vulnerable to the same vagaries and attempts at interpretation as *Frye*.<sup>137</sup> What is unique about Georgia is that while it has a dedicated rule of evidence on scientific evidence in criminal cases, some reported opinions still cite *Harper*, and the language of the statute versus the case is incongruous.<sup>138</sup> Unlike the federal courts, where *Daubert* is embedded in Federal Rule 702, Georgia does not fold *Harper* into Official Code of Georgia Annotated

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<sup>130</sup> MUELLER & KIRKPATRICK, *supra* note 71.

<sup>131</sup> See generally *Harper v. State*, 292 S.E.2d 389 (Ga. 1982).

<sup>132</sup> *Id.* at 391.

<sup>133</sup> *Id.* at 394. The opinion from the psychiatrist was based on an interview the psychiatrist had with the defendant, while the defendant was under the influence of sodium amytal, a "truth serum." *Id.* Outside the presence of the jury, the psychiatrist testified that he gave the defendant this serum "to find the truth" and that use of this "truth serum" was an "accepted medical and psychiatric technique." *Id.*

<sup>134</sup> *Id.*

<sup>135</sup> *Id.* at 396.

<sup>136</sup> *Id.* at 395–96.

<sup>137</sup> See generally *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).

<sup>138</sup> See *Home Depot U.S.A., Inc. v. Tvrdeich*, 602 S.E.2d 297, 299 (Ga. 2004).

(“O.C.G.A.”) section 24-7-707.<sup>139</sup> Instead, they exist in separate silos and may or may not be referenced in a case. Having two separate rules operating at one time creates a “hit or miss” approach that makes it difficult to assess how *Harper* is used.

#### 5. Florida and the *Frye* Years (Pre-2013)

At least West Virginia and Florida have one rule operating at one time. West Virginia’s rule is statutory,<sup>140</sup> while Florida’s is based on case law.<sup>141</sup> Florida’s scientific evidence standard currently exists in a state of purgatory, but there are some defined lines. Pre-2013, the standard is *Frye*.<sup>142</sup> Post-2013, it is *Daubert*. Post-2016, it could be back to *Frye*. Florida adopted the *Frye* standard in 1985 in *Bundy v. State*,<sup>143</sup> the prosecution of the infamous serial killer, Ted Bundy. In reiterating *Frye*, the Florida Supreme Court stated that “the concerns surrounding the reliability of hypnosis warrant a holding that this mechanism, like polygraph and truth serum results, has not been proven sufficiently reliable by experts in the field to justify its validity as competent evidence in a criminal trial.”<sup>144</sup>

And with one fell swoop, *Frye* became the standard in Florida trial courts.<sup>145</sup> But its application was limited to expert opinions based upon *new* or *novel* scientific techniques.<sup>146</sup> In applying the *Frye* test, Florida courts were instructed to scrutinize expert testimony, scientific and legal writings, as well as judicial opinions to determine whether the new or novel scientific techniques had gained the requisite general acceptance in the field.<sup>147</sup>

Florida courts developed a body of case law for its use and application. The court in *U.S. Sugar Corp. v. Henson* recognized that *Frye* receives narrow application and that the “vast majority” of cases do not require an analysis.<sup>148</sup> For its part, the Florida Supreme Court has repeatedly declared that pure opinion testimony is not subject to the *Frye* test.<sup>149</sup> Unfortunately, aspects of forensic testimony can stray into pure opinion.

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<sup>139</sup> GA. CODE ANN. § 24-7-707 (2016).

<sup>140</sup> See discussion *infra* Part I.B.4.

<sup>141</sup> See *Bundy v. State*, 471 So. 2d 9 (Fla. 1985).

<sup>142</sup> *Id.*

<sup>143</sup> *Id.*

<sup>144</sup> *Id.* at 18.

<sup>145</sup> *Id.*

<sup>146</sup> *U.S. Sugar Corp. v. Henson*, 823 So. 2d 104, 109 (Fla. 2002).

<sup>147</sup> *Flanagan v. State*, 625 So. 2d 827, 828 (Fla. 1993).

<sup>148</sup> *Henson*, 823 So. 2d at 109; see also *Rickgauer v. Sarkar*, 804 So. 2d 502, 504 (Fla. Dist. Ct. App. 2001) (“Most expert testimony is not subject to the *Frye* test.”).

<sup>149</sup> See *Marsh v. Valyou*, 977 So. 2d 543, 548 (Fla. 2007) (it is well-established that *Frye* is inapplicable to “pure opinion” testimony); *Flanagan*, 625 So. 2d at 828 (commenting that “pure

This was evident in the Florida Supreme Court's *Ramirez* opinions.<sup>150</sup> Dade County prosecutors have repeatedly won convictions against Joseph Ramirez for the Christmas Eve 1983 robbery and murder of a 27-year-old Federal Express courier who was stabbed to death.<sup>151</sup> At Ramirez's first trial, Robert Hart, a criminalist at the Metro-Dade Police Department, factored as the state's star witness.<sup>152</sup> Hart testified that he had compared a knife (recovered from the car of Ramirez's girlfriend) to striations found on a wound left in the victim's rib cartilage.<sup>153</sup> Hart testified to a "scientific certainty" that he could conclude that Ramirez's knife—and only Ramirez's knife—made the one-half inch mark on the victim's cartilage.<sup>154</sup> Ramirez received the death penalty.<sup>155</sup>

While other evidence existed that implicated Ramirez, the knife testimony was particularly critical.<sup>156</sup> On appeal, the Florida Supreme Court ordered a new trial, declaring Hart's testimony was "self-serving" and scientifically unreliable.<sup>157</sup> At the second trial, Hart testified at a pre-trial hearing that his identification theory was reliable and presented an article he had written about it.<sup>158</sup> The judge prevented Ramirez from presenting any opposing evidence, and with Hart's testimony ruled admissible, Ramirez was convicted and sentenced to death once more.<sup>159</sup>

To its credit, the Florida Supreme Court again reversed the conviction and held that Ramirez had been denied a fair hearing on the admissibility of the knife evidence.<sup>160</sup> Another hearing was held to determine the reliability of the evidence under *Frye*.<sup>161</sup> After the state presented six experts supporting Hart and the defense presented one expert debunking Hart, the judge allowed Hart to testify a third time, yet again.<sup>162</sup> Ramirez again received a death sentence.<sup>163</sup>

Take three at the Florida Supreme Court: it reversed, concluding that Hart's identification procedure "cannot be said to carry the imprimatur of

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opinion testimony . . . does not have to meet *Frye*, because this type of testimony is based on the expert's personal experience and training").

<sup>150</sup> See *Ramirez v. State*, 810 So. 2d 836, 844 (Fla. 2001).

<sup>151</sup> *Id.* at 839.

<sup>152</sup> *Id.*

<sup>153</sup> *Id.* at 848.

<sup>154</sup> *Id.*

<sup>155</sup> *Id.* at 839.

<sup>156</sup> See *id.* at 848.

<sup>157</sup> *Id.* at 841.

<sup>158</sup> *Id.*

<sup>159</sup> *Id.*

<sup>160</sup> *Id.*

<sup>161</sup> *Id.*

<sup>162</sup> *Id.*

<sup>163</sup> *Id.*

science.”<sup>164</sup> The court concluded “that this testimony standing alone is insufficient to establish admissibility under *Frye* in light of the fact that Hart’s testing procedure possesses none of the hallmarks of acceptability that apply in the relevant scientific community to this type of evidence.”<sup>165</sup> In a nod to *Daubert*, the court also observed that Hart’s methodology, “and particularly his claim of infallibility,” lacked any scientific testing or meaningful peer review.<sup>166</sup> The Florida Supreme Court termed it “a classic example of the kind of novel ‘scientific’ evidence that *Frye* was intended to banish—i.e., a subjective, untested, unverifiable identification procedure that purports to be infallible.”<sup>167</sup> To emphasize its point, the Florida Supreme Court ruled that Ramirez could no longer be sentenced to death if tried a fourth time.<sup>168</sup> The prosecution did proceed with a fourth trial—this time with shaky shoeprint evidence—and finally won their conviction.<sup>169</sup>

The Hart testimony essentially amounted to pure opinion about both his confidence in the conclusions and also his capabilities. Testimony like Hart’s is unique in that it was kept *out* of the case. The pure opinion exception (to the Florida Evidence Rules’ general bar on opinion testimony) provides that so long as an expert’s opinion relies on the expert’s personal experience and training and avoids discussion of any scientific method, then the testimony is admissible without judicial scrutiny.<sup>170</sup> As the *NAS Report* noted, many courts “affirm admissibility citing earlier decisions rather than facts established at a hearing.”<sup>171</sup> And so, “while cloaked with the credibility of the expert, this testimony is analyzed by the jury as it analyzes any other personal opinion or factual testimony by a witness.”<sup>172</sup>

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<sup>164</sup> *Id.* at 853.

<sup>165</sup> *Id.* at 849.

<sup>166</sup> *Id.*

<sup>167</sup> *Id.* at 853.

<sup>168</sup> *Id.*

<sup>169</sup> David Ovalle, *Killer of Miami FedEx Delivery Woman Heads to Parole Hearing*, MIAMI HERALD (Dec. 1, 2015, 6:00 PM), <http://www.miamiherald.com/news/local/crime/article47409150.html>. The prosecutors in this case seem particularly hungry for a conviction. At a “fourth trial in 2007, prosecutors introduced a photograph of carpeting from the crime scene” and a detective testified that a “mark on the carpet was the ‘same’ as the defendant’s shoeprint.” Gabe, *Forensic Failures*, CRIME REP. (May 19, 2009), [thecrimereport.org/2009/05/19/forensic-failure/](http://thecrimereport.org/2009/05/19/forensic-failure/). Ramirez was convicted again. *Id.* “In the defense motion that prompted the order for an evidentiary hearing [on the shoeprint], William Bodziak, a former FBI agent and nationally recognized” shoeprint expert, “declared that the mark in a photograph of the carpet is not even identifiable as a shoeprint, but only as ‘faint reddened areas, possibly including some linear areas or lines.’” *Id.* Nonetheless, the conviction remained intact and Ramirez would later end up at parole hearing in December 2015. Ovalle, *supra*.

<sup>170</sup> *Flanagan v. State*, 625 So. 2d 827, 828 (Fla. 1993).

<sup>171</sup> NAS REPORT, *supra* note 3, at 107.

<sup>172</sup> *Id.*

### B. Codified Evidence

While Federal Rule 702 draws no distinction between criminal and civil cases,<sup>173</sup> in some states, this *Daubert* disparity is far more omnipresent—not only in practice but also in the actual state Evidence Code. States will occasionally debate, consider, and sometimes even adopt the federal rules for civil cases. *Daubert*/Federal Rule 702, however, always receives stiff resistance in criminal cases, as evidenced by Florida and Georgia’s reluctance to adopt it.<sup>174</sup> Whether a function of the comfort factor or a strong lobbying effort from prosecutors and others, the status quo persists. Consequently, a patchwork quilt of admissibility endures, and untested forensic science receives a “free pass” in criminal cases.

The following section describes the development of Federal Rule 702 and highlights the inconsistencies between admissibility standards for expert witness testimony across states. Three states from across the admissibility spectrum serve as comparison tools to the federal system: Florida, Georgia, and West Virginia. The examples underscore the reality that the admissibility of scientific expert evidence in criminal cases is all over the map.

#### 1. The Federal Rules of Evidence

As mentioned above, the *Frye* test was created before the Rules were enacted.<sup>175</sup> President Ford signed the Rules into law in 1975 after years of redrafts and decades of attempts to create them.<sup>176</sup> The first version of Rule 702 stated: “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.”<sup>177</sup> Notably, the *Frye* test is mentioned nowhere in the Rule, the Advisory Committee notes, or the legislative history of drafting the rule.<sup>178</sup> The *Daubert* court noted this and decided that the Rules govern expert testimony, not the old *Frye* test.<sup>179</sup>

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<sup>173</sup> See generally FED. R. EVID. 702.

<sup>174</sup> See Alex Cuello & Stephanie Villavicencio, *Adoption of Daubert in the Amendment to F.S. § 90.702 Tightens the Rules for the Admissibility of Expert Witness Testimony*, FLA. B.J., no. 8, Sept.–Oct. 2014, at 1, 38.

<sup>175</sup> See *supra* Part I.

<sup>176</sup> Eileen A. Scallen, *Analyzing “The Politics of [Evidence] Rulemaking”*, 53 HASTINGS L.J. 843, 854 (2002).

<sup>177</sup> FED. R. EVID. 702 (1975).

<sup>178</sup> *Id.*

<sup>179</sup> *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589 (1993).



Rule 702 was not amended until 2000 to codify the *Daubert* standard.<sup>180</sup> The amendment merely extended the Rule by adding the qualifications still in place today.<sup>181</sup> It was further amended in 2011 as part of a holistic attempt to make the Rules of Evidence easier to understand.<sup>182</sup> Today, Federal Rule 702 provides:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.<sup>183</sup>

Even though Rule 702 controls and includes *Daubert*, the pre-trial motion is still titled “*Daubert* Hearing” rather than a “702 Hearing.” *Daubert* hearings are common in civil cases such as toxic torts claims, medical malpractice actions, and product liability cases where causation evidence requires expert testimony. In federal criminal cases, *Daubert* hearings are perhaps gaining some ground due to the *NAS Report*, which created some vulnerability for forensic evidence and opened the door to defense challenges.<sup>184</sup>

## 2. The Florida Rules of Evidence

Florida serves as the base line *Frye* state and also provides a perfect lens through which to view the battle to adopt Rule 702. Florida employed *Frye* as its standard until 2013, when it detoured to *Daubert*, but now it seems poised to revert back to *Frye*.<sup>185</sup> The yo-yo began in 2006 (and perhaps earlier) with an

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<sup>180</sup> Compare FED. R. EVID. 702 (1993) (“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.”), with FED. R. EVID. 702 (2000).

<sup>181</sup> FED. R. EVID. 702 (2000).

<sup>182</sup> FED. R. EVID. 702 (2011).

<sup>183</sup> FED. R. EVID. 702 (2015).

<sup>184</sup> See NAS REPORT, *supra* note 2.

<sup>185</sup> David A. Jones, *Frye v. Daubert—Time to Bring Florida into the 21st Century*, FLA. B. NEWS (Nov. 15, 2015), <https://www.floridabar.org/DIVCOM/JN/jnnews01.nsf/8c9f13012b96736985256aa900624829/8bdc4b8dafac11be85257ef30068b65c!OpenDocument>.

effort by the Florida Legislature to mandate a change from *Frye* to *Daubert*.<sup>186</sup> In 2013, a *Daubert* bill passed and tracks verbatim Federal Rule of Evidence 702.<sup>187</sup> Importantly, the bill included a legislative statement of intent to prohibit “pure opinion” testimony.<sup>188</sup> But the opinion language is not in the actual text of the statute. The bill became effective July 1, 2013, and Florida courts have begun using the new standard, pending Florida Supreme Court review.<sup>189</sup> Thus, it is not yet reflected in the Florida Rules of Evidence.<sup>190</sup>

By moving to *Daubert* and adopting Rule 702 in 2013, Florida has experienced two years with a statutory scientific evidence standard. The reported opinions are sparse (and if the Florida Supreme Court retains *Frye*, they will be void), but there are some appellate level opinions tackling the applicability of the *Daubert* standard in Florida.<sup>191</sup> In *Perez v. Bell South*,<sup>192</sup> the Third District Court of Appeal of Florida affirmed the exclusion of an expert’s testimony under the *Daubert* standard, providing the first in-depth appellate treatment of the *Daubert* standard in Florida.<sup>193</sup>

The case involved a plaintiff’s claim that stressful work conditions caused her to suffer a placental abruption and deliver her child 20 weeks early.<sup>194</sup> The plaintiff offered the testimony of an obstetrician/gynecologist, who testified that in his experience “there may very well be a correlation between placental

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<sup>186</sup> *Id.* Tort reform proponents supported *Daubert*, but the shift was widely opposed by plaintiffs’ personal injury, access to justice advocates, and Florida prosecutors. *Id.*

<sup>187</sup> *Id.*

<sup>188</sup> Stephen E. Mahle, *The “Pure Opinion” Exception to the Florida Frye Standard*, FLA. B.J., no. 2, Feb. 2012, at 41, 41, <https://www.floridabar.org/divcom/jn/jnjournal01.nsf/c0d731e03de9828d852574580042ae7a/00d34c3a55321f4a852579a0005baa1b!OpenDocument&Highlight=0>.

<sup>189</sup> *Id.*; Jones, *supra* note 185.

<sup>190</sup> FLA. STAT. ANN. § 90.702 (West 2013). “Although the new statute has already become operative in Florida Courts,” the Florida Supreme Court must ultimately determine rules of evidence under the Florida Constitution. See FLA. CONST. art. V, § 2; Fla. Bar Trial Lawyer’s Section, Draft White Paper on *Frye/Daubert* (Oct. 26, 2015) (hereinafter Draft White Paper), [https://www.floridabar.org/TFB/TFBResources.nsf/Attachments/608D69B4133F937B85257EEA004F54A7/\\$FILE/DAUBERT%20Draft%20for%20FL%20Bar10.26.15.pdf?OpenElement](https://www.floridabar.org/TFB/TFBResources.nsf/Attachments/608D69B4133F937B85257EEA004F54A7/$FILE/DAUBERT%20Draft%20for%20FL%20Bar10.26.15.pdf?OpenElement). At the time of writing this Article, the Florida Supreme Court is currently considering adoption of an evidence rule to reflect the new statute. *Id.* “In the meantime, Florida trial courts have begun to implement the *Daubert* standard,” with the caveat that it is pending Florida Supreme Court review. *Id.*

<sup>191</sup> See generally *Perez v. Bell So. Telecomms., Inc.*, 138 So. 3d 492 (Fla. Dist. Ct. App. 2014).

<sup>192</sup> *Id.*

<sup>193</sup> *Id.* at 498.

<sup>194</sup> *Id.* at 494–95.

abruption and stress.”<sup>195</sup> Nonetheless, the expert also admitted that scientific research did not support this opinion.<sup>196</sup>

The trial court excluded the expert’s testimony under *Frye* (which applied at the time), which left the plaintiff with no proof of causation.<sup>197</sup> On appeal, the plaintiff argued that the expert’s testimony was “pure opinion” testimony, which *Frye* would let in.<sup>198</sup> During the pendency of appeal, the Florida Legislature amended Florida’s Evidence Code, specifically section 90.702, to incorporate the *Daubert* standard.<sup>199</sup>

The Third District Court of Appeals of Florida definitely concluded that 90.702 controlled when Florida changed “from a *Frye* jurisdiction to a *Daubert* jurisdiction.”<sup>200</sup> Importantly, the court noted that “[t]he legislative purpose of the new law is clear: to *tighten* the rules for admissibility of expert testimony in the courts of this state.”<sup>201</sup> According to the legislature’s expressed intent, the Third District explained that the *Daubert* standard, as “reaffirmed and refined” by the *Joiner* and *Kumho Tire* cases, applies “to all expert testimony,” not just medical expert testimony.<sup>202</sup> Consequently, the “general acceptance” of a scientific theory in the community remains one of many factors a court should consider under the *Daubert* standard, but that factor on its own “is no longer a sufficient basis for the admissibility of expert testimony.”<sup>203</sup>

The appellate court also clarified the legislative intent in barring “pure opinion” testimony. Even though *Frye* previously allowed pure opinions, the court drew a bright line: “Subjective belief and unsupported speculation are henceforth inadmissible.”<sup>204</sup> Finally, in addressing the retroactivity of *Daubert*, the court determined that it “indisputably applies retrospectively” because it was a procedural change to the evidence rules rather than one of substantive law.<sup>205</sup> For support, the court underscored that other courts of appeal in Florida had reached the same result.<sup>206</sup> Ultimately, the court affirmed the judgment in favor of the employer because the methodology employed by the expert did not meet the relevance and reliability standards set forth in *Daubert* and its progeny.<sup>207</sup>

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<sup>195</sup> *Id.* at 496.

<sup>196</sup> *Id.*

<sup>197</sup> *Id.* at 493.

<sup>198</sup> *Id.* at 496.

<sup>199</sup> FLA. STAT. § 90.702 (2013).

<sup>200</sup> *Perez*, 138 So. 3d at 497.

<sup>201</sup> *Id.* (emphasis added).

<sup>202</sup> *Id.*

<sup>203</sup> *Id.* at 498–99.

<sup>204</sup> *Id.* at 499.

<sup>205</sup> *Id.* at 498.

<sup>206</sup> *See id.*; *see also* *Conley v. State*, 129 So. 3d 1120, 1121 (Fla. Dist. Ct. App. 2013).

<sup>207</sup> *Perez*, 138 So. 3d at 499.

Of course, that opinion may have zero bearing moving forward. But it is telling that the appellate court again reinforced that “general acceptance” is not enough. With the impending Florida Supreme Court review, a battle ensued at the end of 2015 to keep *Daubert* out of Florida.<sup>208</sup> As of December 2015, the Florida Bar Board of Governors recommended to the Florida Supreme Court that it retain the *Frye* standard.<sup>209</sup>

### 3. The Georgia Rules of Evidence

Georgia created an evidence code more quickly than the federal courts and by the 1860s Georgia had a “Code of Practice.”<sup>210</sup> Like the federal court system, Georgia too had one standard for experts through case law and another through the Official Code of Georgia (“Georgia Code”).<sup>211</sup> Originally, the Georgia Code made no distinction between expert testimony in criminal cases and expert testimony in civil cases.<sup>212</sup> For years the Georgia rule on expert testimony merely stated: “The opinions of experts on any question of science, skill, trade, or like questions shall always be admissible; and such opinions may be given on the facts as proved by other witnesses.”<sup>213</sup>

This remained the statutory standard until the 2005 Tort Reform Act, which changed the standard for civil cases, but not criminal.<sup>214</sup> Specifically, Georgia adopted the *Daubert* standard for civil cases, leaving the rules governing expert testimony in criminal cases untouched.<sup>215</sup> This adaptation left experts testifying in Georgia criminal cases not only subject to a different evidence rule, but also an entirely different case law standard. By the end of the twentieth century, Georgia considered adopting the Rules, but did not officially do so until 2013.<sup>216</sup>

<sup>208</sup> See Jones, *supra* note 185.

<sup>209</sup> Julie Kay, *Florida Bar Board Votes to Keep Frye Expert Witness Standard*, DAILY BUS. REV. (Dec. 4, 2015), <http://www.dailybusinessreview.com/id=1202744017736/Florida-Bar-Board-Votes-to-Keep-Frye-Expert-Witness-Standard?slreturn=20161004142140>.

<sup>210</sup> PAUL S. MILICH, GEORGIA RULES OF EVIDENCE § 1.1 (2016–2017 ed.).

<sup>211</sup> *Id.*

<sup>212</sup> See GA. CODE ANN. § 24-9-67 (West 1988) (current version at GA. CODE ANN. §§ 24-7-702, 703 (2016)).

<sup>213</sup> *Id.*

<sup>214</sup> MILICH, *supra* note 210, § 15:3.

<sup>215</sup> *Id.*; see also GA. CODE ANN. § 24-9-67.1(f) (West 2010) (current version at GA. CODE ANN. §§ 24-7-702, 703 (2016)) (“It is the intent of the legislature that, in all civil cases, the courts of the State of Georgia not be viewed as open to expert evidence that would not be admissible in other states. Therefore, in interpreting and applying this Code section, the courts of this state may draw from the opinions of the United States Supreme Court in *Daubert* . . .”).

<sup>216</sup> MILICH, *supra* note 210, §§ 1.1, 1.3.

In 2013, Georgia updated its clunky evidence code to bring it into closer agreement with the Federal Rules, with one important exception: the vestigial organ of expert opinions in criminal cases remained.<sup>217</sup> The same criminal case expert testimony statute stayed—just under a different numbering system with the phrase “criminal proceeding” added to the title and text of the statute.<sup>218</sup> Thus, with the adoption of *Daubert* for civil cases only, Georgia created a new standard for criminal cases on its home turf.

#### 4. The West Virginia Rules of Evidence

The “general acceptance” *Frye* test for admitting scientific evidence, although still adopted by several states, became secondary when the Rules were enacted 50 years later.<sup>219</sup> Within these Rules, the *Daubert* standard was predominantly used when deciding the admissibility of scientific evidence in the courtroom. Rule 702 states:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if . . . the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue . . . .<sup>220</sup>

*Daubert*, which is the standard contained within the Rules, allows evidence to be admitted without “general acceptance” in the relevant scientific community.<sup>221</sup> Many states, including West Virginia, found the *Frye* “general acceptance” test too rigid. Therefore, the Rules, inherently containing the *Daubert* standard, became the norm for admitting scientific evidence in criminal cases across the nation, displacing the *Frye* standard in federal courts.

However, West Virginia does not strictly adhere to the *Frye* or *Daubert* standards.<sup>222</sup> Although often referred to as a “*Daubert*-like” test, West Virginia’s standard for admissibility of expert scientific evidence in criminal cases is less strict than both *Frye* and *Daubert*. West Virginia Rule of Evidence 702(b) reads: “[E]xpert testimony based on a novel scientific theory” is only admissible if the *Daubert* factors are met.<sup>223</sup> The *Daubert* factors, as previously noted, exclude

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<sup>217</sup> See Robert E. Shields & Leslie J. Bryan, *Georgia’s New Expert Witness Rule: Daubert & More*, GA. B.J., Oct. 2005, at 16, 18.

<sup>218</sup> GA. CODE ANN. § 24-7-707 (West 2015) (“In criminal proceedings, the opinions of experts on any question of science, skill, trade, or like questions shall always be admissible; and such opinions may be given on the facts as proved by other witnesses.”).

<sup>219</sup> FED. R. EVID. 702.

<sup>220</sup> *Id.*

<sup>221</sup> *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 588–89 (1993).

<sup>222</sup> See W. VA. R. EVID. 702.

<sup>223</sup> See *id.* at 702(b).

expert evidence when testimony is based on a novel theory, methodology, principle, or procedure, if the evidence is not testable.<sup>224</sup> Thus, although West Virginia maintains the “gatekeeper” role, in criminal cases this role is only implemented when “novel scientific” testimony is presented.<sup>225</sup> West Virginia’s Rule 702 “reflects an attempt to liberalize the rules governing the admission of expert testimony.”<sup>226</sup> The Rule is therefore one “of admissibility rather than exclusion,” and is considered less stringent than the Rules’ incorporation of the *Daubert* standard.<sup>227</sup> Under the West Virginia Standard, the admissibility of an expert’s scientific methodology is not jeopardized because it is different—and therefore in dispute—but rather, the weight of the evidence they present may be decreased.<sup>228</sup>

Under West Virginia’s Rule of Evidence 702, the trial court initially considers whether the scientific testimony presented is based on an inference or an assertion acquired from scientific methodology.<sup>229</sup> Then, the court ensures the testimony being offered is relevant to the facts at issue.<sup>230</sup> In addition, the expert’s reliability is assessed to determine the reasoning used to get to the conclusions the given testimony draws.<sup>231</sup> This involves an assessment of

- (a) whether the scientific theory and its conclusion can be and have been tested; (b) whether the scientific theory has been subjected to peer review and publication; (c) whether the scientific theory’s actual or potential rate of error is known; and (d) whether the scientific theory is generally accepted within the scientific community.<sup>232</sup>

If after this assessment, the novel scientific testimony raises a question of admissibility, then (and only then) does the “gatekeeper” role of West Virginia courts exclude the testimony altogether.

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<sup>224</sup> See *Daubert*, 509 U.S. at 593 (“Ordinarily, a key question to be answered in determining whether a theory or technique is scientific knowledge that will assist the trier of fact will be whether it can be (and has been) tested.”).

<sup>225</sup> See *Harris v. CSX Transp., Inc.*, 753 S.E.2d 275, 305 (W. Va. 2013) (stating that *Daubert* analysis is only required “for evaluating a new and/or novel scientific methodology”).

<sup>226</sup> See *Wiesgram v. Marley Co.*, 169 F.3d 514, 523 (8th Cir. 1999), *aff’d*, 528 U.S. 440 (2000).

<sup>227</sup> See *In re Flood Litig. Coal River Watershed*, 668 S.E.2d 203, 210 (W. Va. 2008) (quoting *Arcoren v. United States*, 929 F.2d 1235, 1239 (8th Cir. 1991)).

<sup>228</sup> See *Gentry v. Mangum*, 466 S.E.2d 171, 186 (W. Va. 1995) (“Disputes as to the strength of an expert’s credentials, mere differences in the methodology, or lack of textual authority for the opinion go to the weight and not the admissibility of their testimony.”).

<sup>229</sup> See *Wilt v. Buracker*, 443 S.E.2d 196, 203 (W. Va. 1993).

<sup>230</sup> *Id.*

<sup>231</sup> *Id.*

<sup>232</sup> *Id.*

Recently, however, the West Virginia Supreme Court conducted a reliability analysis without first looking to the “novel” requirement. In this case, the court found the scientific theory behind expert testimony regarding Gamma-Hydroxybutyrate intoxication was sufficiently reliable.<sup>233</sup> In reaching this conclusion, the court diluted the “novelty” limitation by establishing specific ways around two key factors of reliability. The court first set forth specific rationales for the lack of peer-reviewed publication and a theory’s first appearance in court, including: “(a) the inability to publish in a peer review journal because of industry control, (b) the testimony is not novel and therefore of little publication interest, [or] (c) the topic is of little general interest.”<sup>234</sup> The court next declared an expert’s showing that the scientific method is “used by at least a minority of scientists in the field” sufficient to establish reliability, overriding the consideration of a theory’s general acceptance.<sup>235</sup> By effectively obviating the *Wilt* factors, the court undermined any actual consideration of a theory’s novelty. This allowed the court to avoid the increased scrutiny demanded of novel testimony and to avoid engaging in its gatekeeping role.

### C. State Surveys on Expert Witness Evidence Rules

State standards that govern the admissibility of expert witness testimony differ from state to state. Some states have adopted the *Daubert* standard, some states have adopted the *Frye* standard, and some states have adopted neither. The federal courts and 25 states have adopted some variation of *Daubert*, and *Daubert* is deemed “instructive” in another 10 states.<sup>236</sup> Only 13 states still apply a *Frye* or quasi-*Frye* standard, and 4 others apply their own standards.<sup>237</sup>

As discussed above, the *Frye* standard requires a general consensus among the relevant scientific community in order to admit the expert witness testimony.<sup>238</sup> The *Daubert* standard, which was later adopted into the Rules, allows the judge to be the gatekeeper of the reliability of evidence by applying a three-pronged assessment: “courts are to consider the ‘validity’ or ‘reliability’ of the evidence in question, [its] degree of ‘fit’ to the facts and issues in the case, and the risks or dangers that the evidence will confuse the issues or mislead the jury.”<sup>239</sup> But, even in the aftermath of these landmark cases, states have the liberty to determine which standard, if any, to utilize in their evidentiary rules.

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<sup>233</sup> See *State v. Wakefield*, 781 S.E.2d 222, 236 (W. Va. 2015).

<sup>234</sup> *Id.* at 233 (citation omitted).

<sup>235</sup> *Id.* at 234 (citation omitted).

<sup>236</sup> See *Jones*, *supra* note 185.

<sup>237</sup> *Id.*

<sup>238</sup> See *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923).

<sup>239</sup> MICHAEL B. BRENNAN & J. RIC GLASS, EXPERT TESTIMONY: FROM DR. SNOW, CHOLERA & THE PUMP HANDLE, TO *DAUBERT*, 2011 WISCONSIN ACT 2, AND THE NEW CH. 907 RULES, at 5, <http://www.wisciviljusticecouncil.org/wwcms/wp->

States that have chosen to continue using the *Frye* standard in some form include: Alabama,<sup>240</sup> Arizona,<sup>241</sup> California,<sup>242</sup> District of Columbia,<sup>243</sup> Illinois,<sup>244</sup> Kansas,<sup>245</sup> Maryland,<sup>246</sup> Michigan,<sup>247</sup> Minnesota,<sup>248</sup> New Jersey,<sup>249</sup> New York,<sup>250</sup> Pennsylvania,<sup>251</sup> and Washington.<sup>252</sup> It is important to note, however, that courts in North Dakota, although currently applying *Frye*, have urged the state to apply the *Daubert* factors.<sup>253</sup> Alabama's test is referred to as the *Perry/Frye* test,<sup>254</sup> California's test is called the *Kelly/Frye* test,<sup>255</sup>

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content/uploads/2012/01/Expert\_Testimony\_in\_the\_Context\_of\_Jurors\_and\_Science.pdf; *see also* *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993).

<sup>240</sup> *See generally* *Courtaulds Fibers, Inc. v. Long*, 779 So. 2d 198 (Ala. 2000) (stating that Alabama still uses the general acceptance *Frye* test).

<sup>241</sup> *See generally* *Logerquist v. McVey*, 1 P.3d 113 (Ariz. 2000) (applying the *Frye* test).

<sup>242</sup> *See generally* *People v. Leahy*, 882 P.2d 321 (Cal. 1994) (concluding the *Frye* test remains a prerequisite to admission of new scientific methodology evidence).

<sup>243</sup> *See generally* *Bahura v. S.E.W. Inv'rs*, 754 A.2d 928 (D.C. 2000) (stating the *Frye* test remains the rule of law).

<sup>244</sup> *See generally* *People v. Basler*, 740 N.E.2d 1 (Ill. 2000) (maintaining that Illinois follows the *Frye* test).

<sup>245</sup> *See* *State v. Patton*, 120 P.3d 760, 783 (Kan. 2005) ("The admissibility of expert testimony is subject to K.S.A. 60-456(b), but the *Frye* test acts as a qualification to the K.S.A. 60-456(b) statutory standard.").

<sup>246</sup> *See generally* *Hutton v. State*, 663 A.2d 1289 (Md. 1995) (noting that the Maryland courts have adopted the *Frye* standard for scientific evidence).

<sup>247</sup> *See generally* *Gilbert v. DaimlerChrysler Corp.*, 685 N.W.2d 391 (Mich. 2004) (holding that *Daubert* did not overrule *Frye* and its progeny, but rather built upon it).

<sup>248</sup> *See* *Goeb v. Tharaldson*, 615 N.W.2d 800, 814 (Minn. 2000) ("[W]e reaffirm our adherence to the *Frye-Mack* standard and reject *Daubert*.").

<sup>249</sup> *See generally* *Hisenaj v. Kuehner*, 942 A.2d 769 (N.J. 2008).

<sup>250</sup> *See generally* *People v. Wesley*, 633 N.E.2d 451 (N.Y. 1994) (applying the *Frye* test to forensic scientific evidence).

<sup>251</sup> *See* *Grady v. Frito-Lay, Inc.*, 839 A.2d 1038, 1044 (Pa. 2003) ("After careful consideration, we conclude that the *Frye* rule will continue to be applied in Pennsylvania.").

<sup>252</sup> *See generally* *State v. Riker*, 869 P.2d 43 (Wash. 1994) (applying the *Frye* standard).

<sup>253</sup> *See* *State v. Hernandez*, 707 N.W.2d 449, 461 (N.D. 2005) (Crothers, J., concurring) ("[I]t is time we consider adopting *Daubert* and its progeny as the law in North Dakota.").

<sup>254</sup> *See generally* *Ex parte Perry*, 586 So. 2d 242 (Ala. 1991).

<sup>255</sup> *See* *People v. Kelly*, 549 P.2d 1240, 1244 (Cal. 1976) ("We have expressly adopted the foregoing *Frye* test and California courts, when faced with a novel method of proof, have required a preliminary showing of general acceptance of the new technique in the relevant scientific community.").



Maryland's is called the *Frye/Reed* test,<sup>256</sup> Michigan uses the *Davis/Frye* test,<sup>257</sup> and New Jersey uses an admissibility test that originates from the *Frye* test.<sup>258</sup>

States adopting the *Daubert* test or a similar test for the admissibility of expert witness evidence have adopted the Rules, since *Daubert* is the federal standard. These states include: Alaska,<sup>259</sup> Arkansas (uses *Daubert* factors but only to novel evidence, methodology, or theory),<sup>260</sup> Colorado (may consider *Daubert* factors at the trial court level),<sup>261</sup> Connecticut and Delaware (allow trial courts to decide whether *Daubert* reliability factors are used and expands *Daubert*'s applicability to technical and specialized knowledge),<sup>262</sup> Florida,<sup>263</sup> Georgia (applies *Daubert* to civil cases but *Frye* to criminal),<sup>264</sup> Hawaii (allows trial courts the discretion to apply *Daubert*'s flexible factors),<sup>265</sup> Idaho (adopts most of the *Daubert* factors),<sup>266</sup> Indiana (allows *Daubert* factors to guide courts, but not necessarily govern),<sup>267</sup> Iowa (allows trial courts discretion in applying *Daubert* factors),<sup>268</sup> Kentucky (adopts *Daubert* factors but says such factors are not exclusive),<sup>269</sup> Louisiana,<sup>270</sup> Maine and Massachusetts (allow general acceptance in the relevant community to be an independently sufficient factor

<sup>256</sup> See generally *Reed v. State*, 391 A.2d 364 (Md. 1978) (using the *Frye* analysis to determine that voiceprint analysis had not yet achieved general acceptance in the scientific community).

<sup>257</sup> See generally *People v. Davis*, 72 N.W.2d 269 (Mich. 1955).

<sup>258</sup> See generally *State v. Kelly*, 478 A.2d 364 (N.J. 1984).

<sup>259</sup> See generally *State v. Coon*, 974 P.2d 386 (Alaska 1999) (adopting the *Daubert* standard).

<sup>260</sup> See *Farm Bureau Mut. Ins. Co. of Ark., Inc. v. Foote*, 14 S.W.3d 512, 519 (Ark. 2000) (“This court has not previously adopted the holding in *Daubert*. We do so now.”).

<sup>261</sup> See generally *People v. Shreck*, 22 P.3d 68 (Colo. 2001) (en banc).

<sup>262</sup> See *State v. Porter*, 698 A.2d 739, 746 (Conn. 1997) (“[W]e conclude that the *Daubert* approach should govern the admissibility of scientific evidence in Connecticut.”). See generally *Nelson v. State*, 628 A.2d 69 (Del. 1993) (stating the state’s case law is consistent with *Daubert*).

<sup>263</sup> See generally *Perez v. Bell S. Telecomms., Inc.*, 138 So. 3d 492, 498 (Fla. Dist. Ct. App. 2014).

<sup>264</sup> See generally *Mason v. Home Depot USA*, 658 S.E.2d 603 (Ga. 2008) (holding that trial court’s use of *Daubert* standard was appropriate).

<sup>265</sup> See generally *State v. Montalbo*, 828 P.2d 1274 (Haw. 1992).

<sup>266</sup> See generally *State v. Merwin*, 962 P.2d 1026 (Idaho 1998).

<sup>267</sup> See generally *Steward v. State*, 652 N.E.2d 490, 498 (Ind. 1995) (“[A]lthough not binding upon the determination of state evidentiary law issues, the federal evidence law of *Daubert* and its progeny is helpful to the bench and bar in applying Indiana Rule of Evidence 702(b).”).

<sup>268</sup> See *Leaf v. Goodyear Tire & Rubber Co.*, 590 N.W.2d 525, 533 (Iowa 1999) (“We hold that trial courts are not required to apply the *Daubert* analysis in considering the admission of expert testimony. Nevertheless, trial courts may find it helpful, particularly in complex cases . . . .”). See generally *Ganrud v. Smith*, 206 N.W.2d 311 (Iowa 1973).

<sup>269</sup> See generally *Mitchell v. Commonwealth*, 908 S.W.2d 100 (Ky. 1995), *overruled in part by Fugate v. Commonwealth*, 993 S.W.2d 931 (Ky. 2013) (overruling case law that conflicts with the Supreme Court’s holding in *Daubert*).

<sup>270</sup> See generally *State v. Foret*, 628 So. 2d 1116 (La. 1993).

for admissibility),<sup>271</sup> Michigan,<sup>272</sup> Mississippi (says *Daubert* factors are not mandatory),<sup>273</sup> Missouri (applies *Daubert* as guiding factors),<sup>274</sup> Montana (limits *Daubert* to novel evidence),<sup>275</sup> Nebraska,<sup>276</sup> Nevada (allowing *Daubert* to be persuasive authority),<sup>277</sup> New Hampshire,<sup>278</sup> New Mexico,<sup>279</sup> North Carolina (courts are not bound by federal case law but accepts *Daubert*),<sup>280</sup> Ohio,<sup>281</sup> Oklahoma (applies *Daubert* to all scientific testimony, not just expert),<sup>282</sup> Oregon,<sup>283</sup> Rhode Island,<sup>284</sup> South Carolina,<sup>285</sup> Tennessee,<sup>286</sup> Texas (applies *Daubert* to all expert testimony),<sup>287</sup> Utah (applies a stricter form of *Daubert* with

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<sup>271</sup> See *Commonwealth v. Lanigan*, 641 N.E.2d 1342, 1349 (Mass. 1994) (“We suspect that general acceptance in the relevant scientific community will continue to be the significant, and often the only, issue [in arguments over the admissibility of scientific evidence].”). See generally *State v. Williams*, 388 A.2d 500 (Me. 1978).

<sup>272</sup> See *Gilbert v. Daimler Chrysler Corp.*, 685 N.W.2d 391, 409 (Mich. 2004) (“In other words, both [the *Daubert* and *Frye*] tests require courts to exclude junk science; *Daubert* simply allows courts to consider more than just ‘general acceptance’ in determining whether expert testimony must be excluded.”).

<sup>273</sup> See generally *Miss. Transp. Comm’n v. McLemore*, 863 So. 2d 31 (Miss. 2003) (holding that *Daubert* factors are illustrative and not mandatory considerations).

<sup>274</sup> See generally *State Bd. of Registration for the Healing Arts v. McDonagh*, 123 S.W.3d 146 (Mo. 2003).

<sup>275</sup> See *State v. Moore*, 885 P.2d 457, 471 (Mont. 1994) (“We conclude that the guidelines set forth in *Daubert* are consistent with our previous holding in *Barmeyer* concerning the admission of expert testimony of novel scientific evidence, and we, therefore, adopt the *Daubert* standard for the admission of scientific expert testimony.”).

<sup>276</sup> See generally *Schafersman v. Agland Coop*, 631 N.W.2d 862 (Neb. 2001) (holding that after October 1, 2001, courts in the state of Nebraska should interpret the state rules of evidence using the standards set forth in *Daubert*).

<sup>277</sup> See generally *Krause Inc. v. Little*, 34 P.3d 566 (Nev. 2001).

<sup>278</sup> See generally *Baker Valley Lumber. v. Ingersoll-Rand Co.*, 813 A.2d 409 (N.H. 2002) (applying *Daubert* standard and declining to apply *Frye* standard).

<sup>279</sup> See generally *State v. Alberico*, 861 P.2d 192 (N.M. 1993) (applying *Daubert* standards to New Mexico’s state rule of evidence 702).

<sup>280</sup> See generally *State v. Goode*, 461 S.E.2d 631 (N.C. 1995).

<sup>281</sup> See generally *Miller v. Bike Athletic Co.*, 687 N.E.2d 735 (Ohio 1998).

<sup>282</sup> See *Christian v. Gray*, 65 P.3d 591, 600 (Okla. 2003) (adopting the *Daubert* standard for determining “admissibility of expert testimony in [all] civil matters” in Oklahoma).

<sup>283</sup> See generally *State v. O’Key*, 899 P.2d 663 (Or. 1995) (en banc).

<sup>284</sup> See generally *State v. Wheeler*, 496 A.2d 1382 (R.I. 1985).

<sup>285</sup> See generally *State v. Council*, 515 S.E.2d 508 (S.C. 1999) (declining to adopt *Daubert*, but using its factors for guidance under the state rules of evidence).

<sup>286</sup> See *McDaniel v. CSX Transp. Inc.*, 955 S.W.2d 257, 265 (Tenn. 1997) (“[W]e conclude that Tennessee’s adoption of Rules 702 and 703 . . . supersede the general acceptance test of *Frye*.”).

<sup>287</sup> See *E.I. du Pont de Nemours & Co. v. Robinson*, 923 S.W.2d 549, 556 (Tex. 1995) (“We are persuaded by the reasoning in *Daubert* . . .”).

the *Rimmasch* approach),<sup>288</sup> Vermont,<sup>289</sup> West Virginia (applies *Daubert* to scientific testimony),<sup>290</sup> and Wyoming (says if an expert's methodology is deemed to be reliable, the court should then determine whether the expert's testimony applies to the facts of the case).<sup>291</sup>

Virginia and Wisconsin outright reject any aspect of both the *Frye* test and the *Daubert* test. Virginia declined to adopt both *Frye*<sup>292</sup> and *Daubert* in court decisions, but suggested *Daubert* may not be abandoned forever in Virginia evidence rules.<sup>293</sup> Instead, Virginia requires the court to make a finding of fact regarding the reliability of the scientific method offered, unless the method is so familiar that it does not require a foundation to be established; it is so fundamentally reliable; its exclusion has "ripened into rules of law[;] . . . or . . . its admission is regulated by statute."<sup>294</sup> Wisconsin, like Virginia, declined both tests.<sup>295</sup> Wisconsin courts find scientific evidence admissible if: "(1) it is relevant, (2) the witness is qualified as an expert, and (3) the evidence will assist the trier of fact in determining an issue of fact."<sup>296</sup> Reliability is not considered.<sup>297</sup>

### III. RATIONALIZING THE IRRATIONAL

Despite the availability of *Daubert*, a noticeable divide has developed between civil and criminal cases involving scientific evidence. As the concerns over biased experts continued, *Daubert* gave judges an activist role in determining the admissibility of scientific and technical evidence. Suddenly, judges were thrust into unfamiliar oversight of the scientific validity of the evidence.

*Daubert* generated numerous byproducts—most prominently a rise in *in limine* hearings in civil cases—as judges explored and adopted their gatekeeping task. But in criminal cases, a far more "hands-off" practice has developed:

For years in the forensic science community, the dominant argument against regulating experts was that every time a forensic scientist steps into a courtroom, his work is vigorously

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<sup>288</sup> See generally *State v. Rimmasch*, 775 P.2d 388 (Utah 1989), *superseded by rule*, *State v. Maestas*, 299 P.3d 892 (Utah 2012).

<sup>289</sup> See generally *State v. Brooks*, 643 A.2d 226 (Vt. 1993).

<sup>290</sup> See generally *Wilt v. Buracker*, 443 S.E.2d 196 (W. Va. 1993).

<sup>291</sup> See generally *Bunting v. Jamieson*, 984 P.2d 467 (Wyo. 1999).

<sup>292</sup> See generally *O'Dell v. Commonwealth*, 364 S.E.2d 491 (Va. 1988).

<sup>293</sup> See generally *John v. Im*, 559 S.E.2d 694 (Va. 2002).

<sup>294</sup> *Spencer v. Commonwealth*, 393 S.E.2d 609, 621 (Va. 1990).

<sup>295</sup> *State v. Fischer*, 778 N.W.2d 629, 642 (Wis. 2010); *Watson v. State*, 219 N.W.2d 398, 403 (Wis. 1974).

<sup>296</sup> *State v. Peters*, 534 N.W.2d 867, 872 (Wis. Ct. App. 1995).

<sup>297</sup> *Id.*

peer reviewed and scrutinized by opposing counsel. A forensic scientist might occasionally make an error in the crime laboratory, but the crucible of courtroom cross-examination would expose it at trial. This “crucible,” however, turned out to be utterly ineffective.<sup>298</sup>

The following section discusses the origins of the reluctance to adopt *Daubert* in criminal cases at the federal level, followed by an exploration of state level issues. Georgia, Florida, and West Virginia again serve as vehicles for exploring the evolution of the *Daubert*-based state standards. The section further discusses *Daubert*'s cost considerations and the constitutional implications of the disparate treatment that civil and criminal cases receive under the standard.

#### A. *Issues at the Federal Level*

The reluctance to adopt *Daubert* has multiple origins, including cost, efficiency, and hostility. In an older study from 2000, D. Michael Risinger collected federal cases in which *Daubert* had been cited.<sup>299</sup> The study demonstrated the differences between criminal and civil cases. Risinger identified 120 criminal appeal cases citing *Daubert*.<sup>300</sup> In 67 cases, the defendant challenged the government evidence, but the prosecution succeeded in 61 cases. Of the six cases finding for the defendant, only one actually determined that the government's scientific evidence was unreliable.<sup>301</sup>

In criminal cases where the defense attempted to bring in its own expert and were denied, the exclusion was affirmed in 44 of those cases. For the remaining 10 cases, 7 found a failure to hold a *Daubert* hearing, but just 1 case was actually remanded for retrial.<sup>302</sup> Compare those numbers to civil cases, where the defendants challenged the admission of the plaintiffs' scientific evidence: Defendants filed 90% of *Daubert* appeals and prevailed two-thirds of the time.<sup>303</sup>

Of course, it is difficult to piece together what actually occurred in a trial based on appellate decisions. The reported decisions only summarize the big picture and rarely deal with the minutiae. But the numbers seem to support that *Daubert* receives different effect in criminal cases. In criminal cases, the focal point is on identifying the suspect as the source of evidence (fingerprints, DNA, bite marks) and linking a suspect to a crime scene (ballistics, hair, fiber). Of these

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<sup>298</sup> Peter J. Neufeld, *The (Near) Irrelevance of Daubert to Criminal Justice: And Some Suggestions for Reform*, 95 AM. J. PUB. HEALTH S107 (2005).

<sup>299</sup> D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?*, 64 ALB. L. REV. 99 (2000).

<sup>300</sup> *Id.* at 104–05.

<sup>301</sup> *Id.* at 105.

<sup>302</sup> *Id.* at 107.

<sup>303</sup> *Id.* at 108.

methods of identification, DNA profiling is the only one housed in the scientific rigor of biochemistry and population genetics.<sup>304</sup> DNA profiling has been subjected to peer review, and DNA testing laboratories are subject to external quality assurance. Although there are significant theoretical and methodological gaps in the forensic pattern identification disciplines,<sup>305</sup> this evidence—generally offered by the prosecution—is usually admitted, even sometimes by judicial notice.<sup>306</sup> Moreover, even if the methodology is sound (as in DNA), that still does not mean that it was *applied* reliably to a particular case.<sup>307</sup> Finally, if the defense objects to the admissibility of the prosecution’s forensic evidence (and that is a big “if”), courts often shift the burden to the defense and require proof of *inadmissibility*. This is counter to *Daubert*, which requires that the proponent of the expert evidence demonstrate its validity and reliability.<sup>308</sup>

B. *What’s the Matter with ~~Kansas~~ Georgia? The State Level Issues*

As the use of scientific evidence in civil cases becomes more prominent (and expected), the threshold issue of admissibility will have to be meted out by the appellate courts in the states. While *Daubert* presupposes some level of gatekeeping, that judicial fact-finding may be scant in a *Frye* jurisdiction or, as in Georgia, wholly absent. As discussed, *Daubert*’s adoption at the state court level has a batting average above .500. Even though *Daubert* applies to federal courts, it replaced another federal common law: *Frye*, which experienced widespread adoption over the years. Moreover, Rule 702 of the Rules has been adopted in 38 states, and since Rule 702 bootstraps *Daubert*, there is reason to believe that the holdouts will at some point revisit their standards for admissibility of scientific evidence.

1. The *Harper*-Georgia Code 24-7-707 Two Step

Georgia’s updated statute for expert testimony admissibility in civil cases was modeled after the Rules and follows the *Daubert* standard.<sup>309</sup> Under this standard, in order to be admitted, the expert testimony must be relevant and assist the trier of fact.<sup>310</sup> Opinions of a witness qualified as an expert may be given on the facts as proved by other witnesses. Specifically, the statute states:

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<sup>304</sup> Margaret A. Berger, *Expert Testimony in Criminal Proceedings: Questions Daubert Does Not Answer*, 33 SETON HALL L. REV. 1125, 1126–27 (2003).

<sup>305</sup> See, e.g., Michael J. Saks, *Merlin and Solomon: Lessons from the Law’s Formative Encounters with Forensic Identification Science*, 49 HASTINGS L.J. 1069, 1081–1127 (1998).

<sup>306</sup> See, e.g., *United States v. Martinez*, 3 F.3d 1191, 1197 (8th Cir. 1993).

<sup>307</sup> *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 593 (1993).

<sup>308</sup> *Id.*

<sup>309</sup> PAUL S. MILICH, *GEORGIA RULES OF EVIDENCE* 484 (2013–2014 ed.).

<sup>310</sup> *Id.* at 486.

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 upon sufficient facts or data;
- (2) The testimony is the product of reliable principles and methods; and
- (3) The witness has applied the principles and methods reliably to the facts of the case which have been or will be admitted into evidence before the trier of fact.<sup>311</sup>

Although the new code section for expert testimony admissibility in Georgia civil cases appears identical to the federal standard for expert admissibility, subsection (f) of the statute contains a difference. Subsection (f) states, “in interpreting and applying [Georgia Code section 24-7-702], the courts of this state may draw from the opinions of the United States Supreme Court in *Daubert* . . . and other cases in federal courts applying the standards announced by the United States Supreme Court in these cases.”<sup>312</sup> In using this language, one can assume that the Georgia Legislature meant to make use of the *Daubert* standard in civil cases permissive, but not mandatory.<sup>313</sup>

For civil cases, the revised Georgia statute for expert testimony admissibility offers a substantial amount of guidance for trial courts determining admissibility. For many proponents of tort reform, this heightened burden for admissibility is a welcome addition to the Georgia rules because it prevents a jury from considering evidence of questionable reliability.

The civil cases make clear that Georgia courts fully support *Daubert*. In *Giannotti v. Beleza Hair Salon, Inc.*,<sup>314</sup> the Giannottis brought suit against Beleza Hair Salon for personal injury and loss of consortium after a Beleza cosmetologist negligently performed hair-coloring treatment on the plaintiff, causing her to suffer chemical burns.<sup>315</sup> The trial court ruled that the testimony of the plaintiff’s expert was inadmissible, and the plaintiff appealed.

The appellate court found the plaintiff’s expert, a purported expert in chemistry, did not use reliable principles and methods to test the hair products in question.<sup>316</sup> The court also found the expert did not reliably apply his principles and methods to the facts of the case: (1) he did not conduct tests related to the effects of hair products on human skin; (2) he conducted his tests using a

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<sup>311</sup> GA. CODE ANN. § 24-7-702 (West 2013).

<sup>312</sup> *Id.*; PAUL S. MILICH, COURTROOM HANDBOOK ON GEORGIA EVIDENCE 324 (West 2012).

<sup>313</sup> MILICH, *supra* note 309, at 322.

<sup>314</sup> 675 S.E.2d 544 (Ga. Ct. App. 2009).

<sup>315</sup> *Id.* at 545.

<sup>316</sup> *Id.* at 547.

different chemical than the one applied to the plaintiff; and (3) he used a different type of heat source in testing the chemical's effects.<sup>317</sup> Thus, the appellate court found that the trial court did not err in its decision to exclude the expert's testimony because the expert did not meet the standard set forth in Georgia Code section 24-6-67.1 (substantially identical to Georgia Code section 24-7-702).<sup>318</sup>

Despite progress on the civil side, Georgia seems incapable of rationalizing its case law with its statutory law when it comes to scientific evidence in criminal cases.<sup>319</sup> This raises the question: *what is the standard?* Georgia Code section 24-7-707 is generous in allowing expert testimony in criminal proceedings: "Opinions of experts . . . shall *always* be admissible."<sup>320</sup> This language is as wide as the net can be cast. Instead of creating a standard or rule, this statute is the anti-rule. It states the expert's testimony not just *may be* admissible, but that it *shall always* be admissible.<sup>321</sup> This is somewhat contrary to the *Harper* standard where the judge decides whether or not the party's expert evidence has reached a scientific stage of verifiable certainty.<sup>322</sup>

While *Harper* limits the wide net cast by the statute, the judge still has broad discretion in deciding whether that evidence is verifiable or reliable.<sup>323</sup> Over the years, further limitations have appeared, scattered across case law.<sup>324</sup> Now *Harper* is limited to scientific theories and techniques, meaning "the evidence offered must hail from a discipline that accepts the skepticism and rigorous testing indicative of a science."<sup>325</sup> This limitation has only added to the confusion. Additionally, the Georgia Court of Appeals has stated that *Harper* only applies to an expert's use of scientific tests, procedures, or techniques<sup>326</sup> and not to an expert's application of novel or controversial scientific theories or principles to the facts of the case.<sup>327</sup> Again, this is counter to *Daubert's* reliability

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<sup>317</sup> *Id.*

<sup>318</sup> *Id.*

<sup>319</sup> *See supra* Part I.

<sup>320</sup> GA. CODE ANN. § 24-7-707 (West 2013) (emphasis added).

<sup>321</sup> *Id.*

<sup>322</sup> *See supra* Part I.A.4; *see also* *Harper v. State*, 292 S.E.2d 389, 395–96 (Ga. 1982); MILICH, *supra* note 210, § 15:9.

<sup>323</sup> *See* MILICH, *supra* note 210, § 15:9 ("The jury has no role in this preliminary matter and the trial judge can accept any evidence or information that will aid in the decision.").

<sup>324</sup> *See generally* *Jones v. State*, 586 S.E.2d 224 (Ga. 2003); *Jordan v. Ga. Power Co.*, 466 S.E.2d 601 (Ga. Ct. App. 1995).

<sup>325</sup> MILICH, *supra* note 210, § 15:9.

<sup>326</sup> *Home Depot U.S.A., Inc. v. Tvrdeich*, 602 S.E.2d 297, 301 (Ga. Ct. App. 2004); *see also* *Orkin Exterminating Co. v. McIntosh*, 452 S.E.2d 159, 165 (Ga. Ct. App. 1994) (holding *Harper* does not apply to expert testimony that exposure to pesticides caused symptoms because the defendant's challenge to the testimony was that it was drawn from the evidence, as opposed to challenging the test or technique).

<sup>327</sup> *Home Depot*, 602 S.E.2d at 301; MILICH, *supra* note 210, § 15:9.

standard, and suggests that *Harper* scrutinizes the use of scientific tests and theories more than it does novel use of theories or tests. In reality, *Harper* actually glazes over reliability.<sup>328</sup>

Novel and new sciences under *Harper* have been scrutinized by other case law questioning “whether the new theory or technique has successfully passed through the necessary stages of inquiry, testing, and critical review and has earned its bona fides as valid, reliable, and ready to be used.”<sup>329</sup> In determining whether a new science has reached verifiable certainty, the opinion of the expert must either be “tested and verified [to be] certainly competent evidence of the fact” or “the trial judge will review the scientific record, with the assistance of expert testimony, treatises, and any other information supplied by the parties and ultimately decide whether there still exists significant doubt, due to insufficient testing or debatable test results, that the theory is ready for the courtroom.”<sup>330</sup> As a comment on the trend:

[i]n civil cases, courts seem quite up to the tasks of evaluating microbiology, teratology, and toxicology evidence . . . . Yet when it comes to evaluating the shortcomings of lip prints and handwriting, courts are unable to muster the most minimal grasp of why a standardless form of comparison might lack evidentiary reliability or trustworthiness.<sup>331</sup>

This gives the judge the option to determine, without any other standard, whether the testimony is reliable.

The question remains: What is the standard? The Georgia Code was changed and updated decades after the creation of the *Harper* standard, but *Harper* is still the test.<sup>332</sup> In 2006, this issue came before the Court of Appeals of Georgia, right after the 2005 Tort Reform Act in *Carlson v. State*.<sup>333</sup> The Court of Appeals stated that because the old and new statutes were “almost verbatim,” the Georgia Legislature did not intend to supersede the standard set by *Harper*.<sup>334</sup>

## 2. Perpetual Purgatory in Florida

There are no easy answers in Georgia. Meanwhile, the West Virginia and Florida approaches hinge on the “novel” or “new” aspect of the evidence,

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<sup>328</sup> MILICH, *supra* note 210, § 15:9 n.11.

<sup>329</sup> *Id.*

<sup>330</sup> *Id.*

<sup>331</sup> Jane Campbell Moriarty, *Will History Be Servitude?: The NAS Report on Forensic Science and the Role of the Judiciary*, 2010 UTAH L. REV. 299, 315.

<sup>332</sup> *See generally* Paul C. Giannelli, *Ballistics Evidence Under Fire*, 25 CRIM. JUST. 50 (2011).

<sup>333</sup> *See generally* *Carlson v. State*, 634 S.E.2d 410 (Ga. Ct. App. 2006).

<sup>334</sup> *Id.* at 414.



which despite the *Daubert v. Frye* distinction, makes the application in each state more similar than different.

While the Florida Rules of Evidence largely mirror the Federal Rules, Florida's adherence to *Frye* is a notable exception, and there has been a disconnect between the federal and Florida courts since 1993. In 2013, the Florida Legislature amended the Florida Evidence Code to adopt the *Daubert* standard and discard the long-standing *Frye* standard.<sup>335</sup>

On December 4, 2015, however, the Florida Bar Board of Governors recommended that the Florida Supreme Court reject the amendments to Florida Statute sections 90.702 and 90.704 as rules of evidence and thereby retain *Frye* as Florida's test for the admissibility of expert testimony.<sup>336</sup> This issue was controversial, with more than 600 comments submitted by Florida Bar members and members of the public. Those comments were divided, with the plaintiffs' bar preferring the retention of *Frye* and the defense bar favoring adoption of *Daubert*.<sup>337</sup> The Code and Rules of Evidence Committee experienced a similar divide, and it recommended, after a narrow 16 to 14 vote, that the Florida Supreme Court reject *Daubert*.<sup>338</sup>

This would change the shape of *Frye*'s singular application to "new or novel" science and only considers the acceptance of a particular principle within its field. In Florida, *Frye* has sometimes resulted in convictions based on bullet lead analysis, gunshot residue, hair, or bite mark analyses that, while "generally accepted" in the criminal investigation community, later betrayed dubious scientific legitimacy.<sup>339</sup> *Daubert* would exclude expert opinions and conclusions founded on overextended or unwarrantable inferences from the facts in evidence.<sup>340</sup>

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<sup>335</sup> See Ch. 2013-107, Laws of Fla., amending Fla. Stat. Ann. §§ 90.702 and 90.704.

<sup>336</sup> Kay, *supra* note 209.

<sup>337</sup> *Florida Bar Member Responses, Comments and Attachments: Daubert/Frye, Oct. 26–Nov. 15, 2015*, FLA. B., [http://www.floridabar.org/TFB/TFBResources.nsf/Attachments/5BF78BF48AD32DA585257F070051C8C6/\\$FILE/24a%20Daubert%20Frye%20Feedback%20from%20Members.pdf?OpenElement](http://www.floridabar.org/TFB/TFBResources.nsf/Attachments/5BF78BF48AD32DA585257F070051C8C6/$FILE/24a%20Daubert%20Frye%20Feedback%20from%20Members.pdf?OpenElement) (last visited Nov. 3, 2016).

<sup>338</sup> Gary Blankenship, *Frye Standard Endorsed by Board of Governors*, FLA. B. NEWS (Jan. 1, 2016), <http://www.floridabar.org/divcom/JN/jnnews01.nsf/8c9f13012b96736985256aa900624829/03a3f1132f4308a685257f1d00698136!OpenDocument>.

<sup>339</sup> *Id.*

<sup>340</sup> In addition, *Frye* is subject to criticism that it suffers from "cultural lag." *Frye* is so heavily steeped in traditional types of evidence that it might actually exclude innovative, yet reliable, evidence that has yet to garner "general acceptance." This can create a "cultural lag" under a *Frye* regime.

### 3. The Novelty of West Virginia

Under Rule 702 of the West Virginia Rules of Evidence, there is a category of expert testimony based on scientific methodology that is so longstanding and generally recognized that it may be judicially noticed and a trial court need not ascertain the basis for its reliability.<sup>341</sup> In analyzing the admissibility of expert testimony under Rule 702 of the West Virginia Rules of Evidence, the trial court's initial inquiry must consider whether the testimony is based on an assertion or inference derived from the scientific methodology.<sup>342</sup>

Moreover, the testimony must be relevant to a fact at issue. Further assessment should then be made in regard to the expert testimony's reliability by considering its underlying scientific methodology and reasoning. This includes an assessment of (a) whether the scientific theory and its conclusion can be and have been tested; (b) whether the scientific theory has been subjected to peer review and publication; (c) whether the scientific theory's actual or potential rate of error is known; and (d) whether the scientific theory is generally accepted within the scientific community. "Whether a witness is qualified to state an opinion is a matter which rests within the discretion of the trial court and its ruling on that point will not ordinarily be disturbed unless it clearly appears that its discretion has been abused."<sup>343</sup> Thorny problems of admissibility arise when an expert seeks to base his or her opinion on novel or unorthodox techniques that have yet to stand the test of time to prove their validity.

Until 1993, West Virginia followed *Frye* and excluded such innovative testimony unless the techniques involved had earned "general acceptance" in the relevant scientific community.<sup>344</sup> In deciding whether to admit novel scientific evidence, a circuit court must consider and make findings on the record. A circuit court in West Virginia is not required to afford equal weight to each factor, but instead may balance the factors as it deems appropriate. Nevertheless, whether the ruling is on admissibility arising from a motion *in limine* or on summary judgment, a circuit court must make factual findings sufficient to permit meaningful appellate review.

#### C. *Contemplating Comparable Standards*

As forensic science moves to comparable standards, the Rules of Evidence and trial practice should follow that lead. The problem with the various

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<sup>341</sup> See W. VA. R. EVID. 702.

<sup>342</sup> *Id.*

<sup>343</sup> *Hall v. Nello Teer Co.*, 203 S.E.2d 145 (W. Va. 1974) (quoting *Overton v. Fields*, 117 S.E.2d 598, 607 (W. Va. 1960)); see also *Bd. of Educ. v. Zando, Martin & Milstead, Inc.*, 390 S.E.2d 796 (W. Va. 1990) (quoting *State v. M.M.*, 256 S.E.2d 549 (1979)).

<sup>344</sup> *State v. Clawson*, 270 S.E.2d 659, 662 (W. Va. 1980) (explicitly adopting *Frye*), *abrogated by Wilt v. Buracker*, 443 S.E.2d 196, 200–03 (W. Va. 1993).

confusing standards for admitting expert testimony in criminal cases is that the confusion extends to practice. Using Georgia as an example, while *Harper* and *Daubert* are similar in that they create “gatekeeping” roles for the judge, the standards are not the same.<sup>345</sup> The standard created by *Harper* is more lenient than *Daubert*, making it is easier to admit expert testimony in criminal cases in Georgia.<sup>346</sup> In *Daubert*, the Supreme Court set out standards and factors to aid the judge in determining reliability.<sup>347</sup> If a judge doubts the reliability of an expert at a *Daubert* hearing, the judge knows he should consider: testability, rate of error, peer review and publication, and general acceptance to determine if the opinion is reliable.<sup>348</sup> But under *Harper*, what does the judge consider? What the judge thinks? Merely whether or not the expert is using science? *Harper* does not provide the judge with any standard to determine reliability.<sup>349</sup>

Additionally, because *Daubert* laid out questions to determine reliability, *Daubert* is easier to understand. In the alternative, *Harper* has been reinterpreted in case after case.<sup>350</sup> Courts are inconsistent with what passes as admissible because there is little in the way of evidence exclusion in criminal cases.<sup>351</sup> In Georgia, it is a free-for-all because Georgia Code section 24-7-707 fails to limit expert testimony in criminal cases.<sup>352</sup> The biggest issue with Georgia Code section 24-7-707 is that even though this statute has been around for decades, along with *Harper*, the Georgia General Assembly has been unwilling to codify *Harper* in the Georgia Evidence Code.<sup>353</sup>

*Harper* and *Frye* lend themselves to being a vaguer and more liberal standard than *Daubert*. This standard becomes even more liberal for a scientific technique that is no longer novel and thus evidence of reliability is no longer necessary. In *Hawkins v. State*, the Georgia Court of Appeals stated that “once a

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<sup>345</sup> See MILICH, *supra* note 210, § 15:9 (“[T]here really is not that much difference between Harper and Daubert. Both go beyond Frye and require that the trial judge take a more active, gatekeeping role in rejecting expert testimony that is unreliable.”).

<sup>346</sup> Julie A. Seaman, *A Tale of Two Dauberts*, 47 GA. L. REV. 889, 891 (2013) (“[A]pplication of the Harper test is more lenient than Daubert, as evidenced by the long—and ultimately successful—campaign by ‘tort reform’ advocates to persuade the legislature to replace it with the Daubert standard in civil cases.”).

<sup>347</sup> Compare *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589 (1993), with *Harper v. State*, 292 S.E.2d 389, 395–96 (Ga. 1982).

<sup>348</sup> *Daubert*, 509 U.S. at 589; MILICH, *supra* note 210, § 15:9.

<sup>349</sup> See *Harper*, 292 S.E.2d at 395–96.

<sup>350</sup> MILICH, *supra* note 210, § 15:9 n.29.

<sup>351</sup> Compare *Prickett v. State*, 469 S.E.2d 371, 374 (Ga. Ct. App. 1996) (stating post-traumatic stress syndrome has not been established as an admissible scientific principle in Georgia), *overruled by State v. Belt*, 505 S.E.2d 1 (Ga. 1998), with *Strickland v. State*, 479 S.E.2d 125, 131 (Ga. Ct. App. 1996) (allowing evidence of post-traumatic stress syndrome), *overruled by Watson v. State*, 777 S.E.2d 677 (Ga. 2015).

<sup>352</sup> GA. CODE ANN. § 24-7-707 (West 2013).

<sup>353</sup> *Id.*

procedure has been utilized for a significant period of time, and expert testimony has been received thereon in case after case, the trial court does not have to keep reinventing the wheel; a once novel technology can and does become commonplace.”<sup>354</sup>

The opinion in *Hawkins* brings forth even more issues with the way *Harper* is applied. What length of time constitutes a “significant amount of time?” How often does a scientific technique need to be presented before it becomes “commonplace?” With no qualifying guidelines in place for such questions, courts applying the *Harper* standard are relying even further on judges’ subjective views of what they think is “commonplace.” A judge in one circuit may have seen and ruled on certain expert evidence—such as roadside sobriety field tests—often enough that he or she does not require evidence of reliability because the evidence is now commonplace. Another judge in the same circuit may have seen the same kind of expert evidence presented the same, less, or even more times than the first judge, yet still does not consider the expert evidence commonplace, and therefore requires evidence of reliability.

The problems with *Harper* and *Frye* only begin with a subjective view on the necessity of reliability evidence. To be clear, courts have stated that even if expert scientific evidence is “generally admitted” by being an “accepted, common procedure that has reached a state of verifiable certainty in the scientific community,” defendants still have a right to challenge the application of the scientific technique in question.<sup>355</sup> Although defendants seem to be able to challenge the application of the scientific technique through cross examination, the general admission of certain scientific evidence creates a presumption of reliability to the jury that must be actively objected to by the defense. This effectively removes the prosecution’s burden of proving that the forensic examiner “substantially performed the scientific procedures in an acceptable manner.”<sup>356</sup>

For generally accepted scientific evidence, the “first component of the foundation for the admission of scientific evidence, that is, that ‘the scientific principle and techniques . . . are valid and capable of producing reliable results’ is presumptively satisfied.”<sup>357</sup> So not only do courts in *Frye* (or *Harper*-esque) states assume with certain evidence that it is reliable, but the defendant must actively prove that the normally reliable evidence came about in the wrong manner. At least with the *Daubert* standard, nothing is presumed and the burden remains on the offering party to prove that their scientific evidence is admissible throughout all of the listed elements. *Daubert* relies more on the true power of the attorneys and the court to do their job properly by arguing expert scientific

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<sup>354</sup> *Hawkins v. State*, 476 S.E.2d 803, 807 (Ga. Ct. App. 1996).

<sup>355</sup> *State v. Tousley*, 611 S.E.2d 139, 144–45 (Ga. Ct. App. 2005) (quoting *State v. Pierce*, 596 S.E.2d 725, 728 (Ga. Ct. App. 2004)).

<sup>356</sup> *Id.*

<sup>357</sup> *Id.* at 144 (quoting *Johnson v. State*, 448 S.E.2d 177, 179 (Ga. 1994)).

evidence on the applicable standards, rather than arbitrarily allowing for some evidence to go to the jury based on one judge's experience.

*Daubert*, however, is not without its share of critics and controversy. In a more recent study on the effect of *Daubert* in state and federal cases with similar subject matter, one scholar compiled the results of *Daubert* hearings in a number of cases involving experts that were most used in both civil and criminal contexts. The study showed that prosecution evidence posited by a handwriting expert was admitted in 90% of criminal cases but less than 40% of civil cases; expert testimony in fire cause cases was admitted around 75% for both criminal and civil cases.<sup>358</sup>

This shows the inconsistency through which judges apply *Daubert* towards already established scientific practices such as handwriting analysis, even in the absence of tightly controlled standards in the handwriting analysis scientific community, as compared to the more universally agreed upon standards of the fire origin science community. Although it is an inconsistency that trial courts are trying to eliminate with each standard, *Daubert* is still worlds ahead of *Harper* and *Frye*. With the *Daubert* standard, inconsistency emerges after all factors are applied, whereas *Harper* creates inconsistencies not only upon application of factors, but which factors a trial court must consider.

Narrowing the evidentiary standard by adopting *Daubert* would have a lasting effect, not only on evidence going to the jury, but also on the responsibilities of attorneys and the judiciary. Judges' subjective views would no longer strictly control the flow of scientific expert evidence, instead they would have to hear arguments under the reliability factors. Application of *Daubert* may result in some inconsistencies between the same expert testimony in two different cases—and some scientific expert evidence that would previously be allowed may now be disallowed—but the decision would be made by applying the *Daubert* reliability factors.<sup>359</sup> Attorneys would be unable to rely solely on previously used experts and testimony in order to meet a more liberal standard, which could result in more preparation, further scientific research, and more money spent on expert testimony as a whole.<sup>360</sup> The potential added expense to expert testimony is outweighed by the result of only the most reliable scientific evidence going to the jury—something that any attorney would want in making their cases. In the end, *Daubert* is the better test because it is easier to understand and goes directly to reliability.

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<sup>358</sup> See Seaman, *supra* note 346, at 908.

<sup>359</sup> See Alfred R. Politzer, *Georgia's Codification of Daubert: Narrowing the Admissibility of Novel Scientific Evidence in Georgia?*, 23 GA. ST. U. L. REV. 481, 509–10 (2006).

<sup>360</sup> *Id.*

*D. The Prejudicial Effect*

As established above, because *Frye* and *Harper* are more lenient in allowing expert testimony, weak conclusions are more likely to be presented to the jury.<sup>361</sup> Therefore, jury instructions must be careful with language.<sup>362</sup> The jury does not have to accept the scientific technique as reliable as that responsibility belongs to the judge, but the jury is supposed to determine credibility.<sup>363</sup> This is problematic because, once the jury has heard the judge accept a witness as an expert, it could be difficult for the jury not to rely on what the expert says.<sup>364</sup>

Perhaps *Frye* or *Harper* permit more trust in juries and more transparency in the courts by allowing juries to hear evidence that would otherwise be inadmissible. And perhaps these standards push scientific communities to progress towards standardized methodologies faster.<sup>365</sup> But to trust that juries, who are not lawyers or scientists, will ignore the prejudicial effects of this evidence remains a major issue in the legal community. Additionally, to allow juries to hear arguments that expert testimony is “non-science,” while the scientific communities play “catch-up” with their standards and procedures, is a dangerous waiting game.

A good example of the prejudicial issues *Frye* and *Harper* create is when character evidence under the Rules is introduced at trial. Under Rule 404, bringing in character evidence to prove a person acted in conformity with that character is generally prohibited.<sup>366</sup> Several well-mapped exceptions<sup>367</sup> to Rule

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<sup>361</sup> See *supra* Part I.A; see also MILICH, *supra* note 210, § 15:9 (“If the basic science and techniques used by the expert are reliable, the fact that the expert’s conclusions are weak or subject to a certain margin of error usually goes to weight, not admissibility.”).

<sup>362</sup> MILICH, *supra* note 210, § 15:9.

<sup>363</sup> See *id.*

<sup>364</sup> See Anna Roberts, *(Re)Forming the Jury: Detection and Disinfection of Implicit Juror Bias*, 44 CONN. L. REV. 827, 827 (2012).

<sup>365</sup> See Jennifer L. Mnookin et al., *The Need for a Research Culture in the Forensic Sciences*, 58 UCLA L. REV. 725, 778–79 (2011) (arguing for more transparency and better research methods from forensic sciences).

<sup>366</sup> FED. R. EVID. 404(a)(1) (“Evidence of a person’s character or character trait is not admissible to prove that on a particular occasion the person acted in accordance with the character or trait.”).

<sup>367</sup> FED R. EVID. 404(a)(2). Rule 404 states the rules as follows:

The following exceptions apply in a criminal case:

(A) a defendant may offer evidence of the defendant’s pertinent trait, and if the evidence is admitted, the prosecutor may offer evidence to rebut it;

(B) subject to the limitations in Rule 412, a defendant may offer evidence of an alleged victim’s pertinent trait, and if the evidence is admitted, the prosecutor may:

(i) offer evidence to rebut it; and

(ii) offer evidence of the defendant’s same trait; and

404 exist, but it is always inappropriate to use character evidence for improper propensity purposes.<sup>368</sup> For example, it would be improper propensity evidence under Rule 404(b) to bring in evidence of a prior drug conviction of a criminal defendant on trial for drug use. It is improper to bring in this evidence to prove that because the criminal defendant did drugs in the past, he is a druggie now, and he did drugs this time.<sup>369</sup> The Rules prohibit this for two main reasons. First, the propensity inference can possibly lead to improper conclusions.<sup>370</sup> Just because someone has done something in the past does not mean that individual did it again in the current matter. Secondly, “the propensity inference would almost always be supported by evidence that carries a significant risk of unfair prejudice.”<sup>371</sup> It is undoubtedly prejudicial to bring in past crimes and bad acts because it puts a poor light on the character of the criminal defendant.<sup>372</sup>

With every rule comes an exception, and Rule 404(b) is no exception to this rule. Under Rule 404(b)(2), crimes, wrongs, or other acts can come in for non-propensity use.<sup>373</sup> Those exceptions for bringing in the character evidence include: “motive, opportunity, intent, preparation, plan, knowledge, identity, absence of mistake, or lack of accident.”<sup>374</sup> Elaborating on the prior drug using criminal defendant mentioned above, in relation to Rule 404(b)(2): this defendant is accused of using heroin via injection. In his prior conviction for drug use, he was found injecting heroin. The prosecutor now argues that—instead of improper propensity showing the defendant did drugs in the past, he is a druggie, so he was doing drugs now—the old conviction comes in to show he *knows* how to inject heroin; that he has *knowledge*. Knowledge is one of the permitted uses for non-propensity character evidence.<sup>375</sup>

While it is true that what would be inadmissible evidence does have some use in showing something besides character for wrongdoing, the evidence still brings the entire propensity purpose with it to the jury.<sup>376</sup> Regarding the example above: even though the defendant’s past drug conviction is coming in

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(C) in a homicide case, the prosecutor may offer evidence of the alleged victim’s trait of peacefulness to rebut evidence that the victim was the first aggressor.

*Id.*

<sup>368</sup> FED. R. EVID. 404(b)(1).

<sup>369</sup> ARTHUR BEST, EXAMPLES & EXPLANATIONS: EVIDENCE 37 (9th ed. 2015).

<sup>370</sup> *Id.* at 34.

<sup>371</sup> *Id.*

<sup>372</sup> *Id.*

<sup>373</sup> FED. R. EVID. 404(b)(2) (“This evidence may be admissible for another purpose, such as a proving motive, opportunity, intent, preparation, plan, knowledge, identity, absence of mistake, or lack of accident.”).

<sup>374</sup> *Id.*

<sup>375</sup> *Id.*

<sup>376</sup> *Id.*

to show he knows how to inject heroin, the fact that he has a conviction for heroin use is coming in as well. To put this in the Rule's terms: even though the drug use is showing knowledge, it is also showing propensity to do drugs.<sup>377</sup>

Some protections do exist for the criminal defendant when this kind of evidence is admitted. Generally, Rule 404(b)(2) evidence is met with a limiting instruction to the jury, telling the jury only to use it for the Rule 404(b)(2) purpose.<sup>378</sup> But the truth of the matter is that the propensity still came in. Even though the conviction might *show* knowledge, the conviction *told* the jury that this defendant has done drugs before so he probably did them again this time.

*Frye* creates the same prejudicial effect for jurors in criminal cases. What the jury does hear is that the expert is reliable, and that the testifying witness is an expert in his or her field. Even if the opinion is weak, that opinion still goes to the jury because the jury determines the weight and credibility of the evidence. But because the judge has already put the stamp of approval on the expert, the jury might be more willing to adopt that approval. Because admissibility hearings are done outside the presence of the jury, it is important that the expert be in fact, an expert. *Daubert* experts are subject to a clearer and more rigorous standard of reliability.<sup>379</sup> The less clear the standard, the more important it is for the jury to understand their role. But in a criminal case—even though the law states a person is innocent until proven guilty<sup>380</sup>—jurors still have bias. Jurors are human. Much like the propensity evidence coming in to show another purpose with the improper propensity stamped all over it, the expert's opinion comes in with the judge's stamp of reliability all over it.

#### E. Cost Considerations

Since its creation in 1993, opponents of the *Daubert* standard have argued that it increases the cost of litigation.<sup>381</sup> Expert reports are lengthy; hearings take time and money. Those parties with the funds (whether corporate defendants or resourceful prosecutors) can afford to inundate their opponents with motions and extensive discovery on the experts.<sup>382</sup> A research project known as the “Delaware Study” examined the legal maneuvering that well-

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<sup>377</sup> See FED. R. EVID. 404.

<sup>378</sup> See, e.g., *U.S. v. Sroufe*, 579 F. App'x 974, 977 (11th Cir. 2014) (giving the jury a cautionary instruction in using evidence admitted under Rule 404(b) to not use that evidence regarding liability).

<sup>379</sup> See *supra* Part I.A.2.

<sup>380</sup> *Coffin v. U.S.*, 156 U.S. 432, 453 (1895) (“The principle that there is a presumption of innocence in favor of the accused is the undoubted law, axiomatic and elementary, and its enforcement lies at the foundation of the administration of our criminal law.”); see also GA. CODE ANN. § 16-1-15 (West 2015) (“Every person is presumed innocent until proved guilty.”).

<sup>381</sup> Draft White Paper, *supra* note 190, at 6–7.

<sup>382</sup> *Id.*



funded parties can engage in under *Daubert*.<sup>383</sup> The authors (who were not lawyers) interviewed a non-random sample of practicing Delaware attorneys and judges.<sup>384</sup> The stated goal was to determine the impact of *Daubert* on litigation.<sup>385</sup> The study recognized that plaintiffs bore the heaviest burden stemming from *Daubert*.<sup>386</sup> Nonetheless, defense attorneys in Delaware did not beat the drums about “junk science.”<sup>387</sup> But, the civil defense attorneys did admit to utilizing *Daubert* to their advantage as “leverage in civil disputes.”<sup>388</sup>

Some might argue that part of this is the point of *Daubert*: to expose holes in the theory of the case and push it to a settlement—at least on the civil side. *Daubert* might also change charging and plea decisions on the criminal end. Yes, *Daubert* brings increased costs, but at the same time it also requires that the government truly prove a case to beyond a reasonable doubt and it likewise prevents the parties from sandbagging each other with expert witnesses.<sup>389</sup>

Moreover, federal civil practice demonstrates that courts can address *Daubert* motions in an organized and efficient manner. *Daubert* needs not be the four-factor hydra that its opponents make it out to be. Federal courts have emphasized that it is within a trial judge’s discretion to decide *Daubert* motions on briefing and argument alone, without the need for evidentiary proceedings.<sup>390</sup> This discretion provides wide latitude for trial judges to assess more routine *Daubert* motions in a way that keeps cost and time down. Indeed, a court could dispense with drawn-out evidentiary hearings for weaker motions.<sup>391</sup> This would still afford litigants their due process rights to challenge expert evidence. If state

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<sup>383</sup> Nicole L. Waters & Jessica P. Hodge, *The Effects of the Daubert Trilogy in Delaware Superior Court*, NCSC (2005), <https://www.ncsc.org/~media/Files/PDF/Services%20and%20Experts/Areas%20of%20expertise/Civil%20Justice/Daubert-Final.ashx>. The study was not an unbiased product, as it was funded by corporate entities with strong footholds in Delaware. In its 2009 annual report, the National Center for State Courts acknowledged substantial funding from corporate defendants including Allstate, Eli Lilly, ExxonMobil, Ford, General Electric, Johnson & Johnson, Liberty Mutual, Pfizer, Schering-Plough, Shell, State Farm, Wyeth, and dozens of large defense-oriented law firms.

<sup>384</sup> *Id.*

<sup>385</sup> *Id.* at 7.

<sup>386</sup> *Id.* at 17–18.

<sup>387</sup> *Id.* at 21.

<sup>388</sup> *Id.*

<sup>389</sup> *Id.* at 19.

<sup>390</sup> See *United States v. Hansen*, 262 F.3d 1217, 1234 (11th Cir. 2001) (“*Daubert* hearings are not required, but may be helpful in ‘complicated cases involving multiple expert witnesses.’”); *City of Tuscaloosa v. Harcros Chems.*, 158 F.3d 548, 564 (11th Cir 1998); *United States v. Sebborn*, No. 10 C. 87(SLT), 2012 WL 5989813 (E.D.N.Y. Nov. 30, 2012) (in challenge to ballistics testimony *Daubert* hearing was not necessary); *United States v. Scarpon*, No. 05-20419-CR, 2006 WL 5100541 (S.D. Fla. Sept. 12, 2006) (denying motion for *Daubert* hearing on ground that defendant’s objections were vague and conclusory).

<sup>391</sup> Draft White Paper, *supra* note 190, at 9–10.

courts can implement *Daubert* in a way that makes adoption less taxing, then *Daubert* should not overload the system or delay cases at the expense of the parties.

#### F. Constitutional Questions

Admittedly, the constitutional aspect of disparate evidence standards is not the point of this Article, but it should be noted in more than just a footnote. This is perhaps more applicable in Georgia than other states due to the blatant schism between the civil and criminal standards.

In particular, some objections to the use of *Harper* touch on the unconstitutionality of applying a different standard to criminal defendants than the standard applied to civil parties.<sup>392</sup> Many of the objections made by criminal defendants articulate that the different standards violate the Equal Protection Clause of the Fourteenth Amendment.<sup>393</sup> Put simply, for the purposes of this Article, the Equal Protection Clause provides that states cannot deny persons equal protection under the law.<sup>394</sup> Today, this is understood to mean the government will treat similar individuals in a similar manner.<sup>395</sup> Notably, the government is still allowed to classify individuals as long as it is rationally based.<sup>396</sup> But a rational basis generally requires a legitimate government end or must advance a legitimate government purpose.<sup>397</sup>

In *Mason v. Home Depot U.S.A., Inc.*, the Georgia Supreme Court held that criminal and civil litigants are not similarly situated; therefore, a different standard between the two is not unconstitutional.<sup>398</sup> This holding was based on

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<sup>392</sup> See *Carruth v. State*, 649 S.E.2d 557, 559 (Ga. Ct. App. 2007) (“[The defendant] contends that the disparity in evidentiary standards for criminal cases under Georgia versus federal law violates the equal protection rights secured by both the Georgia and United States Constitutions.”).

<sup>393</sup> *Id.*; see also *Mason v. Home Depot U.S.A., Inc.*, 658 S.E.2d 603, 614 (Ga. 2008) (Hunstein, J., dissenting) (suggesting that it is actually the civil litigant who is disadvantaged because he has the heightened standard).

<sup>394</sup> U.S. CONST. amend. XIV, § 1 (“No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States . . . nor deny to any person within its jurisdiction the equal protection of the laws.”).

<sup>395</sup> RONALD D. ROTUNDA & JOHN E. NOWAK, 3 TREATISE ON CONST. L. § 18.2(a) (2014).

<sup>396</sup> See *id.* (“It does not reject the government’s ability to classify persons or ‘draw lines’ in the creation and application of laws, but it does guarantee that those classifications will not be based upon impermissible criteria or arbitrarily used to burden a group of individuals.”).

<sup>397</sup> *Id.*

<sup>398</sup> *Mason*, 658 S.E.2d at 607; see also *Dohany v. Rogers*, 281 U.S. 362, 369 (1930) (holding legislatures may adopt one procedure for one class and a different procedure for another class); *Woodward v. State*, 496 S.E.2d 896, 900–01 (Ga. 1998) (stating individuals in Georgia are similarly situated to each other only if they are charged with the same crime).

the idea that to be similarly situated, litigants must be charged with the same offense or cause of action.<sup>399</sup>

Justice Carol W. Hunstein dissented to this holding, stating that civil and criminal litigants are similarly situated and “no rational basis exists for treating them differently.”<sup>400</sup> The dissent notes that the Georgia General Assembly made a point to require expert testimony in civil cases “be the product of reliable principles and methods applied reliably to the facts of the case.”<sup>401</sup> But where is this qualification for criminal cases? Instead of applying the *Daubert* principles to both civil and criminal cases, the Georgia General Assembly left the door wide open with Georgia Code section 24-7-707 in criminal cases.<sup>402</sup> Justice Hunstein astutely observed that, just because the court had found other civil and criminal parties not similarly situated in other cases, this finding does not make them never similarly situated.<sup>403</sup>

Beyond Georgia, no rational reason exists for civil cases to receive the luxury of “opinion testimony that is the product of reliable principles and methods applied reliably to the facts of a case.”<sup>404</sup> In the federal system, having *Daubert* apply to criminal cases in name but not practice sets up a disproportionate structure. Some judges will apply *Daubert* in the criminal context, but many do not. Consequently, individuals charged with the same crimes do not have equal opportunities to challenge the evidence against them. Civil and criminal litigants are “*equally* situated when it comes to the need for qualified, reliable expert opinion testimony at trial.”<sup>405</sup> Instead, *Harper* and Georgia Code section 24-7-707 create the “untenable situation where the *same* evidence proffered by the *same* expert witness for the *same* purpose may be allowed in criminal trials but excluded in civil trials.”<sup>406</sup>

Taking these principles and applying them to similar civil and criminal claims reveals the flaws in relation to different expert standards. For example, assume that an individual is charged with murder in Georgia and is also civilly sued by the victim’s family for wrongful death. The case hinges on bite mark evidence. The plaintiffs in the civil action also retain the bite mark expert used in the criminal prosecution. The expert employs the same scientific tests and procedures for both trials in his testimony, and the quality of the data analyzed in both trials is equal. Even though the evidence is identical, except for the actual

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<sup>399</sup> *Mason*, 658 S.E.2d at 607.

<sup>400</sup> *Id.* at 613 (Hunstein, J., dissenting).

<sup>401</sup> *Id.* at 612.

<sup>402</sup> See GA. CODE ANN. § 24-7-707 (West 2016).

<sup>403</sup> *Mason*, 658 S.E.2d at 612–13 (Hunstein, J., dissenting).

<sup>404</sup> *Id.* at 612.

<sup>405</sup> *Id.* at 613.

<sup>406</sup> *Id.* (emphasis added).

pattern of the bite marks, the expert's testimony is deemed admissible in the criminal trial, but inadmissible in the civil trial.

This happened because, at the civil trial, the expert's testimony underwent a *Daubert* analysis and at the criminal, the expert's testimony underwent a *Harper* analysis. The *Daubert* analysis likely revealed the bite mark determination was inadmissible and unreliable.<sup>407</sup> Alternatively, the criminal court, through a *Harper* hearing, found the evidence reliable because the judge had the authority to consider whether the evidence reached a "scientific stage of verifiable certainty."<sup>408</sup> The same could also be said of an outcome in a *Frye* state where the civil action proceeds federally.

Bite mark analysis is a good example of this predicament because it has been heavily scrutinized in recent years.<sup>409</sup> The guidelines to analyzing bite marks fail to indicate "the criteria necessary for using each method to determine whether the bite mark can be related to a person's dentition and with what degree of probability."<sup>410</sup> Further, most bite mark analysis is made by comparing a mold made of a consenting individual's mouth and comparing it to the bite mark, as opposed to comparing the bite mark to multiple individual's mouths.<sup>411</sup> This conclusion automatically calls reliability into question because "there is no established science indicating what percentage of the population or subgroup of the population could also have produced the bite."<sup>412</sup> *Daubert* disallows evidence like this because *Daubert* specifically looks for reliability and testability, which are clearly called into question with bite mark analysis.<sup>413</sup>

This treatment flies in the face of a "full and fair trial."<sup>414</sup> All litigants should be similarly situated when it comes to the admissibility of reliable

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<sup>407</sup> See *supra* Part II.A.3.

<sup>408</sup> *Harper v. State*, 292 S.E.2d 389, 395–96 (Ga. 1982).

<sup>409</sup> Jonathan Jones, *Forensic Tools: What's Reliable and What's Not-So-Scientific*, FRONTLINE (Apr. 17, 2012), <http://www.pbs.org/wgbh/pages/frontline/criminal-justice/real-csi/forensic-tools-whats-reliable-and-whats-not-so-scientific/>; see also Meagan Flynn, *Texas Forensic Science Commission: Bite Mark Evidence is Junk Until Proven Otherwise*, HOUSTONPRESS (Feb. 18, 2016), <http://www.houstonpress.com/news/texas-forensic-science-commission-bite-mark-evidence-is-junk-until-proven-otherwise-8166329>.

<sup>410</sup> NAT'L ACAD. OF SCIS., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 174 (2009), <https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf>.

<sup>411</sup> *Id.*

<sup>412</sup> *Id.*

<sup>413</sup> See *supra* Part I.A.2.

<sup>414</sup> THOMAS H. CALVERT, 9 THE FEDERAL STATUTES ANNOTATED: CONTAINING ALL THE LAWS OF THE UNITED STATES OF A GENERAL AND PERMANENT NATURE IN FORCE ON THE FIRST DAY OF JANUARY, 1903, at 432 (1906) ("Where a party has had the benefit of a full and fair trial in the several courts of his own state, whose jurisdiction was invoked by himself, and his rights were measured not by laws made to affect him individually, but by general provisions of law applicable to all those in like condition, he cannot claim to have been deprived of property without due process of law." (citing *Marchant v. Pa. R.R. Co.*, 153 U.S. 380, 385 (1894)).

evidence. No greater need for reliable evidence exists in civil cases than criminal cases. This “violates the equal protection clause of the United States” because “[t]here is, and can be, no legitimate, rational reason to distinguish between the nature of the litigation when it comes to the admissibility of the same testimony by the same expert witness.”<sup>415</sup> Simply put, there is no rational reason to provide criminal defendants with separate but equal expert standards.

#### IV. BRINGING SCIENTIFIC EVIDENCE STANDARDS INTO THE TWENTY-FIRST CENTURY

For no good reason, civil expert evidence receives more scrutiny than what goes on in criminal litigation. This seems contrary to a common sense expectation that the admissibility of evidence should be determined regardless of the civil/criminal divide (except that prosecutions carry a high burden of proof). Scientific evidence should receive equal treatment, and this is especially true in American trials, where the expert witness sits atop the pedestal of witnesses. A jury may view an expert witness as “an objective authority figure more knowledgeable and credible than the typical lay witness,”<sup>416</sup> because the expertise relates to substance that exceeds the common knowledge of the jury. A jury does not possess the requisite legal and scientific skill to thoroughly evaluate the reliability of an expert’s opinion. This amplified influence and separation removes the expert from the jury’s usual assessment of credibility and reliability. Instead, an expert witness is “generally unfettered” by many of the evidentiary constraints that restrict the testimony of lay witnesses: experts are not required to have firsthand knowledge, they can use inadmissible evidence to form the bases of their opinions, and they can sometimes even testify as to the ultimate issue in the case.<sup>417</sup>

If reasonable policy reasons exist for maintaining different standards for criminal and civil cases, they would be articulated here. But they are not. Simply put, states should embrace *Daubert* for criminal cases as well. This would hold experts to the same level of accountability. A forensic chemist or medical examiner’s theories should not receive a free pass in a criminal case when the same would be excluded in a civil case.<sup>418</sup>

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<sup>415</sup> *Mason v. Home Depot U.S.A., Inc.*, 658 S.E.2d 603, 612–13 (Ga. 2008) (Hunstein, J., dissenting).

<sup>416</sup> *In re Christus Spohn Hosp. Kleberg*, 222 S.W.3d 434, 440 (Tex. 2007).

<sup>417</sup> *Id.*

<sup>418</sup> *Wills v. Amerada Hess Corp.*, 379 F.3d 32, 48–50 (2d Cir. 2004) (holding district court did not abuse discretion by excluding forensic toxicologist’s oncogene theory of causation of cancer because theory was not generally accepted, was not supported by testing or peer-reviewed literature, and rate of error was unknown, expert relied on affidavit of an unqualified and untrained seaman to quantify dosage of exposure, and expert did not account for smoking as possible cause of cancer); *DaimlerChrysler Corp. v. Hillhouse*, 161 S.W.3d 541, 553–55 (Tex. Ct. App. 2004) (explaining how the medical forensic expert’s opinion that depowered air bag would have

A weaker standard in criminal cases may make it easier to win cases, but not the right ones. While it is true that, in a non-*Daubert* system, the criminal defendant should be able to bring in expert testimony to the same extent that the government does, the lack of resources often makes this an impossible hurdle that cannot be crossed. The Sixth Amendment only provides for the assistance of counsel, not the assistance of experts.<sup>419</sup>

It could be argued that because the criminal and civil trials have different burdens of proof, the evidence should also be treated differently.<sup>420</sup> Given that a higher burden of proof exists in criminal cases, should not the admissibility of expert testimony be held to just as high a standard? It would make sense for the expert's testimony to be true "beyond a reasonable doubt" when the court asks the jury to make a determination of guilt beyond a reasonable doubt. In fact, a higher burden of proof in criminal cases suggests that those cases deserve more protection and scrutiny.<sup>421</sup>

Weak admissibility standards create a situation where "beyond a reasonable doubt" is based on weak, unreliable expert testimony. It should be criminal defendants—whose liberties are on the line—who receive the benefit of *Daubert*'s rigor. Having relaxed standards creates a situation where prejudicial evidence easily comes before the jury.<sup>422</sup> The judge puts a stamp of reliability on the expert's testimony for the jury to see.<sup>423</sup> While judges may be careful to instruct the jury that they have the power to determine credibility, the jurors, subject to their own biases, will have a difficult time separating credibility from reliability.<sup>424</sup>

"[L]aw and science are intersecting with increasing regularity," and, thus, scientific and legal reliability are inextricably intertwined.<sup>425</sup> At this intersection, we have the ability to restrict scientific evidence to only that which is relevant and reliable. This seems fairly uncomplicated, but the reality of it is something akin to tiptoeing through a minefield. The *NAS Report* indicated that

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prevented or significantly reduced risk of child's injuries was unreliable and "unsupported by any meaningful analysis" because expert relied on testing from another expert that was not comparable and expert did not perform own test). *But see* *Ake v. Oklahoma*, 470 U.S. 68 (1985) (holding that when an indigent defendant has made a preliminary showing that his sanity at the time of the offense will likely be a significant factor at trial, the state must provide access to a psychiatrist to assist the defendant on the issue, if the defendant cannot otherwise afford one).

<sup>419</sup> See *Ake*, 470 U.S. 68.

<sup>420</sup> Compare GA. CODE ANN. § 16-1-5 (2016) ("No person shall be convicted of a crime unless each element of such crime is proved beyond a reasonable doubt."), with *Murray v. State*, 505 S.E.2d 746, 748 (Ga. 1998) ("The standard requires only that the finder of fact be inclined by the evidence toward one side or the other.").

<sup>421</sup> See *supra* Part II.

<sup>422</sup> See *supra* Part III.D.

<sup>423</sup> *Id.*

<sup>424</sup> *Id.*

<sup>425</sup> *State v. Ayers*, 923 N.E.2d 654, 659 (Ohio Ct. App. 2009).

a troubling amount of dubious science has crept into criminal prosecutions.<sup>426</sup> At the same time, the facts and questions to be analyzed in a case have grown increasingly complicated and often exceed the bounds of familiar or general knowledge. Consequently, there is a heavy reliance upon expert testimony to make the case. As forensic science moves away from “experience” and “training” as the foundations for reliability, so too should the courts.

If courts merely accept “experience” or “training” as a substitute for proof that an expert’s opinions are reliable and then only examine the testimony for gaps in the expert’s logic and opinions, an expert can effectively insulate his or her conclusions from meaningful review by filling gaps in the testimony with almost any type of data or subjective opinions. This happened routinely in cases involving hair microscopy.<sup>427</sup> As the law now stands, *Daubert* provides the best way to examine whether “there is a sufficient connection between the existing data and the opinion offered or if there is ‘simply too great an analytical gap’ for the expert testimony to be considered reliable.”<sup>428</sup>

Even when the most susceptible forensic sciences—hair microscopy, bite marks, and handwriting—are challenged, the courts routinely affirm admissibility citing earlier decisions rather than developing evidence that might dictate a different result.<sup>429</sup> Defense lawyers may forego a challenge when faced with what they perceive to be rock solid evidence (and it could very well be far from that). Moreover, even if a defense attorney brings a motion in limine to exclude that evidence, he or she may be ill equipped to competently handle it.

Finally, moving the criminal justice system over to a *Daubert* stringency may ameliorate some of the so-called “CSI Effect.”<sup>430</sup> Prosecutors have complained that TV shows like *CSI* and its multiple spinoffs and copycats might

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<sup>426</sup> See NAS REPORT, *supra* note 2, at 86–87.

<sup>427</sup> See, e.g., *People v. Renteria*, No. B174775, 2005 Cal. App. LEXIS 11995, at \*186 (Cal. Ct. App. Sept. 20, 2005); *McGrew v. State*, 682 N.E.2d 1289 (Ind. 1997); *Johnson v. Commonwealth*, 12 S.W.3d 258, 262–63 (Ky. 1999).

<sup>428</sup> *St. Clair v. Alexander*, No. 13-08-00218-CV, 2009 WL 3135812, at \*1, 8 n.4 (Tex. Ct. App. Sept. 30, 2009). Of course, sometimes experience is necessary to fill gaps when the data requires interpretation. Federal Rule 702 requires that the expert reliably apply the principles and methods to the facts of the specific case. FED. R. EVID. 702. As explained in the Advisory Committee’s notes, “If the expert purports to apply principles and methods to the facts of the case, it is important that this application be conducted reliably.” FED. R. EVID. 702 advisory committee’s note. Professor Graham describes this test as requiring proof the scientific theory is “employed in a manner consistent with processes customarily employed by experts in the particular field.” MICHAEL H. GRAHAM, HANDBOOK OF FEDERAL EVIDENCE § 702.5, at 218 (7th ed. 2012). The U.S. Supreme Court, citing the preliminary draft of Rule 702, stated this principle ensures that courts examine not only the general reliability of the expert’s theory but also the specific question presented in deciding the particular issues in the case. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 596 (1993).

<sup>429</sup> See, e.g., *Renteria*, 2005 Cal. App. LEXIS 11995, at \*186.

<sup>430</sup> Jeff Chesen, *The “CSI Effect”—There’s No Such Thing as Questions, Just Hidden Answers*, IT’S EVIDENT (July, 2008), <http://www.ncstl.org/evident/July08%20ResearchFocus>.

raise jurors' expectations that forensic evidence must be present at trial before they will convict a defendant.<sup>431</sup> *CSI*-like shows gained widespread popularity in the 2000s, and are amply represented in syndication. As a result, case law now acknowledges the possible existence, if not validity, of the CSI Effect.<sup>432</sup>

I disagree, however, with the notion that *CSI* only complicates the prosecution's case.<sup>433</sup> The general complaint is that forensic dramas saturate the airwaves and manipulate the public (i.e., prospective jurors) perception of criminal investigations to such a degree that it disfavors the prosecution.<sup>434</sup> From the prosecutor's perspective, the burden to prove guilt beyond a reasonable doubt is all the more challenging when a jury demands Hollywood science in cases.<sup>435</sup> When the evidence fails to meet that expectation, the specter of acquittal looms near. This is a lopsided argument, but once the media glommed on a "guilty people go free" story, the sensationalism (and fear-mongering) legitimized what was an otherwise speculative claim. Published studies have failed to conclusively substantiate the theory.<sup>436</sup>

I submit that it is "equally plausible" that *CSI* might bolster the prosecution's case by lending credibility to existing forensic evidence in the case.<sup>437</sup> Focusing on the "cause and effect" relationship between *CSI* and verdicts misses the larger picture: that junk science is slipping through the cracks, creating a glut of bad decisions and wrongful convictions. If anything, *CSI* merely contributes to an insidious distortion about the infallibility and certainty of science, and *Daubert* with its more rigorous approach can mitigate that effect on both sides of the aisle. The defense also sometimes presents sensational, spurious evidence.<sup>438</sup>

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<sup>431</sup> See NAS REPORT, *supra* note 2, at 48–49.

<sup>432</sup> United States v. Fields, 483 F.3d 313, 355 n.39 (5th Cir. 2007) (citing Tom R. Tyler, *Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction*, 115 YALE L.J. 1050 (2006)).

<sup>433</sup> See Gabel, *supra* note 19, at 247–49.

<sup>434</sup> See Kit R. Roane, *The CSI Effect: On TV, It's All Slam-Dunk Evidence and Quick Convictions. Now Juries Expect the Same Thing—and That's a Big Problem*, U.S. NEWS (Apr. 7, 2005), [http://www.academia.edu/1191938/The\\_CSI\\_effect](http://www.academia.edu/1191938/The_CSI_effect).

<sup>435</sup> See *id.*

<sup>436</sup> Chesen, *supra* note 430.

<sup>437</sup> Tom R. Tyler, *Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction*, 115 YALE L.J. 1050, 1052–55 (2006).

<sup>438</sup> For example, the proper application of *Daubert* in a Texas criminal case might have kept out evidence of "affluenza" in a chilling vehicular homicide case. A psychologist testified that the teenaged defendant suffered "affluenza," and, as a result, lacks the ability to "link bad behavior with consequences because his parents taught him that wealth buys privilege." The teenager received a light sentence despite the tragic death of four people. Michael Muskal, *Texas Teen's Probation for Killing 4 While Driving Drunk Stirs Anger*, L.A. TIMES (December 12, 2013), <http://articles.latimes.com/2013/dec/12/nation/la-na-nn-texas-teen-drunk-driving-probation-affluenza-20131212>. Currently, there are no peer-reviewed articles stating that affluenza is or



A juror study by Judge Donald Shelton concluded that the problem lies in a more generalized “tech effect,” where a high-tech world leads to high-tech expectations and assumptions.<sup>439</sup> Thus, jurors are more accepting of forensic evidence and will often conflate reliability with availability. As one academic points out, “[t]here is widespread evidence indicating that people already overestimate the probative value of scientific evidence.”<sup>440</sup>

Consequently, the portrayal of science as the ultimate crime-fighting tool encourages the already existing overconfidence in the value of flawed forensic findings that jurors—and judges—are confronted with in actual trials. People are already motivated to find ways to legitimize or justify their desire to provide finality and render a guilty verdict.<sup>441</sup> Interestingly, as a society, we have taught people to be skeptical of unsupported claims that lack scientific foundation (such as the “link” between vaccines and autism),<sup>442</sup> and in the legal system, we work overtime to make sure that type of evidence does not creep into civil cases. It seems that we should afford the same treatment to defendants who challenge scientific evidence in criminal cases.

Unfortunately, without a rigorous screening process, untested and subpar science will continue to creep into criminal cases.<sup>443</sup> Frankly, if there is

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should become a bona fide mental health diagnosis, and it is not included in the DSM-5 as a psychiatric diagnosis. The testimony would seem to violate the *Daubert* standard, and Texas does follow *Daubert*—just not as rigorously in criminal cases.

<sup>439</sup> Donald E. Shelton, Young S. Kim & Gregg Barak, *A Study of Juror Expectations and Demands Concerning Scientific Evidence: Does the “CSI Effect” Exist?*, 9 VAND. J. ENT. & TECH. L. 331, 334 (2006).

<sup>440</sup> Tyler, *supra* note 437, at 1068.

<sup>441</sup> *Id.* at 1071 (“Science provides one way to do so, causing people to see within scientific evidence the level of certainty that makes them comfortable with a guilty verdict. Here, it is the credibility of science that is crucial, because jurors seek a form of justification that is plausible and compelling to bolster their own desire for certainty.”).

<sup>442</sup> See, e.g., Christine Vara, *Why We’re Still Talking about Vaccines and Autism*, SHOT OF PREVENTION (Mar. 20, 2013), <http://shotofprevention.com/2013/03/20/why-were-still-talking-about-vaccines-and-autism/>.

<sup>443</sup> A 2007 New Yorker article details the story of N.Y.P.D. detectives who were gunned down in their unmarked police vehicle while working undercover. The prosecution contended that the defendant and an accomplice, sitting in the back seat of the detectives’ car, shot the detectives in a robbery attempt. The crime scene evidence included hundreds of hairs and fibers, so prosecutors recruited criminalist Lisa Faber from the N.Y.P.D. crime lab to testify at the trial. Faber explained that she analyzed samples of fabric from the detectives’ car and opined that all of the fibers in question could have come from the detectives’ vehicle. The criminalist concluded that “the strongest association you can say is that ‘it could have come from’ the source in question.” Her testimony was neither remarkable nor reliable. What is remarkable is that DNA tests showed that blood from one of the detectives was on the defendant’s clothing. Moreover, the accomplice flipped and testified against the shooter. Why did they even use the unnecessary testimony? The criminalist remarked that her testimony “wasn’t crucial,” but she thought that perhaps prosecutors used it to make the case “more ‘CSI-esque.’” Jeffrey Toobin, *The CSI Effect: The Truth About Forensic*

something better than *Daubert* that resolves the reliability issues with scientific evidence in criminal proceedings, I would be all for it. Reality, however, dictates the most practical result: that *Daubert* is the best thing we have right now. A little judicial and lawyer training, coupled with a dose of politicking, might set *Daubert* in the right direction in criminal cases.

## V. CONCLUSION

There can be little debate that, since *Daubert*, the legal landscape has experienced an explosion in expert litigation and epic battles of admissibility, qualifications, and validity. While this trend is more prominent in federal courts (that house the cradle of *Daubert* and Rule 702), the influx of science in state courts is not far behind. *Daubert* charges trial courts with the responsibility to weigh specified criteria and weed out claims or defenses founded on expert evidence that cannot be shown to be reliable. *Frye* lacks the ability to keep pace with the current state of science, research, and technology, and should be retired in favor of *Daubert*'s more modern, scientifically defensible standard for the admissibility of expert testimony.<sup>444</sup>

All courts should follow *Daubert* for expert testimony in criminal cases—and abandon the easy road of judicial notice, acquiescence, and apathy—because “[r]eliable expert opinion testimony is no less important in criminal cases than it is in civil cases.”<sup>445</sup> Adopting *Daubert* holistically could be deemed a quixotic quest, but the incongruent treatment of scientific evidence in criminal and civil cases should be abandoned. Yes, there is unease about hired guns in civil cases, but the loss of liberty and life in criminal cases warrants equal concern.

In criminal cases, unlike civil cases, courts have generally been unwilling to exclude scientific evidence for lack of sufficient validation and reliability. Scientific reliability and legal reliability should be two sides of the same coin. Forensic science is raising its reliability bar, and we should raise the legal bar. When the evidence is admitted, it has received the gold-seal of reliability. Attaining that seal is all-too-easy in a criminal case. Real analysis of the evidence is required. Admissibility and reliability determinations rest on more than satisfaction of a threshold sufficiency factor; they require detailed consideration of what the evidence demonstrates and how the trier of fact will weigh it.

A one-size-fits-all *Daubert* may not be the best approach in theory, but I believe it is the best approach in practice. The late and esteemed Margaret

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*Science*, THE NEW YORKER (May 7, 2007), <http://www.newyorker.com/magazine/2007/05/07/the-csi-effect>.

<sup>444</sup> See *supra* Part II.

<sup>445</sup> *Mason v. Home Depot U.S.A., Inc.*, 658 S.E.2d 603, 612–13 (Ga. 2008) (Hunstein, J., dissenting).

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Berger noted that “[w]hat criminal defendants need in order to deal more effectively with the forensic identification expertise proffered against them is not more *Daubert*, but tools that would enable them to make more cogent evidentiary arguments—better counsel, access to expert assistance and more discovery.”<sup>446</sup> That statement is absolutely true, but it will take years of resource reallocations and legislative lobbying to achieve anything close to it. At this moment, we are on the cusp of breakthroughs in forensic science. But much like the law, not all crime labs will immediately adopt the more scientific approach. As one arm of the criminal justice system, we have a legal obligation to meet the challenge of new and old evidence with appropriate admissibility standards that reflect the advancements of science now and in the future. If we fail to do so, then we only perpetuate the ongoing problem of bad science and wrongful convictions.

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<sup>446</sup> Berger, *supra* note 304, at 1140.