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**DAUBERT V. MERRELL DOW  
PHARMACEUTICALS AND THE LOCAL  
CONSTRUCTION OF RELIABILITY**

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ABSTRACT

Scholars considering how expert testimony will fare under *Daubert* often apply the four dicta referenced by Justice Blackmun (testing, peer-review, error rate, and general acceptance) to determine whether such testimony will be admissible. In this article I critique this approach, contending that admissibility decisions cannot be adequately predicted by *Daubert* itself. *Daubert* has no clear legal rule for judges to apply, has no cognizable position on the degree of scrutiny expert testimony should face, and has no clear stance—even given the dicta—on what constitutes “good science.” When combined with the relative autonomy trial judges possess in making admissibility decisions, *Daubert’s* essential ambiguity leads to what I call “local constructions of reliability,” disparate and often competing conceptions of what constitutes reliable expert evidence. What is considered reliable in one area of expert testimony, such as medical causation, will be quite different from what is required for another, such as handwriting expertise.

If *Daubert* leads to such variation among different spheres of expert testimony, how can we generalize or predict judicial decision-making? I argue that admissibility decisions can and should be modeled empirically. Viewing judges as goal-oriented actors, I transform likely goals for judges making *Daubert* decisions into relevant variables for empirical modeling. These goals include attention to the quality of expert testimony (if not

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always under the *Daubert* dicta), maintaining institutional stability and judicial autonomy when faced with controversial scientific claims, and advancing judicial policy preferences. I intend this discussion to serve as a template for further empirical work on *Daubert*.

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## I. INTRODUCTION

Over the next few decades, it is conceivable that scientists will be able to “see” the genesis of a thought. The development of functional magnetic resonance imaging, or fMRI for short, permits a visual approximation of the brain at work, enabling scientists to determine more exactly the physiological starting point of rational thought, emotions, and deception. While much of the attention given to the “new neuroscience” will focus on age-old problems of free will and determinism,<sup>1</sup> fMRI’s potential to detect lies may be of more immediate and practical importance to the justice system. Given the centrality of credibility and truth-telling to court proceedings, it is unsurprising that neurologists are already examining whether fMRI scans can provide valid and reliable evidence that a particular individual is lying.<sup>2</sup>

Expert testimony linking brain scans to deception will only reach federal juries if it meets the evidentiary standard of reliability set forth in *Daubert v. Merrell Dow Pharmaceuticals*.<sup>3</sup>

<sup>1</sup> Compare Joshua Greene & Jonathan Cohen, *For the Law, Neuroscience Changes Nothing and Everything*, 359 PHIL. TRANSACTIONS ROYAL SOC’Y LONDON, SER. B, BIOLOGICAL SCI. 1775, 1775–76 (2004), with Stephen J. Morse, *Brain Overclaim Syndrome and Criminal Responsibility: A Diagnostic Note*, 3 OHIO ST. J. CRIM. L. 397, 398, 402 (2006).

<sup>2</sup> Donald H. Marks et al., *Determination of Truth from Deception Using Functional MRI and Cognitive Engrams*, 5 INTERNET J. RADIOLOGY (2006), <http://www.ispub.com/ostia/index.php?xmlFilePath=journals/ijra/vol5n1/engram.xml>; Daniel D. Langleben et al., *Brain Activity during Simulated Deception: An Event-Related Functional Magnetic Resonance Study*, 15 NEUROIMAGE 727, 727 (2002); Daniel D. Langleben et al., *Telling Truth from Lie in Individual Subjects with Fast Event-Related fMRI*, 26 HUM. BRAIN MAPPING 262, 263 (2005), available at [http://repository.upenn.edu/neuroethics\\_pubs/6](http://repository.upenn.edu/neuroethics_pubs/6); F. Andrew Kozel et al., *A Pilot Study of Functional Magnetic Resonance Imaging Brain Correlates of Deception in Healthy Young Men*, 16 J. NEUROPSYCHIATRY & CLINICAL NEUROSCIENCES 295, 296–97 (2004), available at <http://neuro.psychiatryonline.org/cgi/content/abstract/16/3/295>; Tatia M.C. Lee et al., *Lie Detection by Functional Magnetic Resonance Imaging*, 15 HUM. BRAIN MAPPING 157, 157–58 (2002); Jennifer Marie Nunez et al., *Intentional False Responding Shares Neural Substrates with Response Conflict and Cognitive Control*, 25 NEUROIMAGE 267 (2005); G. Ganis et al., *Neural Correlates of Different Types of Deception: An fMRI Investigation*, 13 CEREBRAL CORTEX 830, 830 (2003), available at <http://cercor.oxfordjournals.org/cgi/content/full/13/8/830>.

<sup>3</sup> See *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 591–95 (1993). The reaction of courts to new technologies has been decidedly mixed. In the forensic context, the criminal justice system has eagerly and perhaps uncritically accepted technological advances that individuate criminal suspects, such as fingerprinting or DNA typing. Jennifer L. Mnookin, *Fingerprint Evidence in an Age of DNA Profiling*, 67 BROOK. L. REV. 13, 16–17, 20 (2001). Advances that attempt to assess the credibility of individual statements, however, have often been received with suspicion and even disdain. Ric Simmons, *Conquering the*

A practitioner or legal scholar interested in the use of fMRI scans in federal courts (and state courts that apply a *Daubert*-like test) must therefore consider how current research meets this standard. At present, at least three such analyses have been published by legal scholars.<sup>4</sup> After providing a layman's summary of the fMRI technique and the research regarding its potential as a lie detector, the articles examine whether fMRI research meets the testing, peer-review, error rate, and general acceptance dicta that often comprise a *de facto* test for applying *Daubert*. The authors generally agree that while the detection of deception using fMRI may someday be admissible, it currently fails to pass muster under these criteria.

Given that federal judges sometimes structure their admissibility opinions along similar lines,<sup>5</sup> it seems reasonable for the authors of these articles to use the *Daubert* dicta to predict judicial behavior. That said, I argue in this article that such an approach is largely mistaken, and that better descriptive understandings of how *Daubert* is applied, as well as how better predictions of how *Daubert* will be applied in the future, require empirical modeling. The problem lies not in the authors' lack of knowledge regarding the underlying science (which they understand well), or their particular applications of the *Daubert* dicta (which are reasonable). The problem lies instead in the assumption that the *Daubert* precedent provides a global definition of reliability that can be extrapolated to specific areas of expert testimony.

I state simply that it does not. Law is most effective in guiding judicial behavior when the law has a relatively clear rule, a relatively clear substantive meaning, or where judges face meaningful appellate oversight. *Daubert* decisions fit none of these criteria. As a decision rule, *Daubert* does not dictate how an admissibility determination should be carried out. The

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*Province of the Jury: Expert Testimony and the Professionalization of Fact-Finding*, 74 U. CIN. L. REV. 1013, 1022, 1027–28 (2006).

<sup>4</sup> Archie Alexander, *Functional Magnetic Resonance Imaging Lie Detection: Is a "Brainstorm" Heading Toward the "Gatekeeper"?*, 7 HOUS. J. HEALTH L. & POL'Y 1, 28–29, 56 (2006); Charles N. W. Keckler, *Cross-Examining the Brain: A Legal Analysis of Neural Imaging for Credibility Impeachment*, 57 HASTINGS L.J. 509, 511, 554–56 (2006); Michael S. Pardo, *Neuroscience Evidence, Legal Culture, and Criminal Procedure*, 33 AM. J. CRIM. L. 301, 319 (2006).

<sup>5</sup> See, e.g., *United States v. Llera Plaza*, 188 F. Supp. 2d 549, 551, 563 (E.D. Pa. 2002); *United States v. Lowe*, 954 F. Supp. 401, 410–11 (D. Mass. 1996); *United States v. Starzecpyzel*, 880 F. Supp. 1027, 1040–41 (S.D.N.Y. 1995).

opinion easily supports contrasting views on the appropriate stringency of the courts towards admitting borderline expert testimony; it also supports contrasting views on the epistemology of science that judges should adopt. Even the *Daubert* dicta, which suggest that expert testimony should be tested, peer-reviewed, generally accepted, and present error rates, lacks a consensus understanding of these terms. As precedent, *Daubert* is much like the inscription on the Mirror of Erised from *Harry Potter and the Sorcerer's Stone*: "I show not your face but your heart's desire."<sup>6</sup>

A fractured precedent with no central meaning, *Daubert* leads to what I call "local constructions of reliability," what constitutes reliable expert testimony in one sphere of science may be quite different from what passes *Daubert* in another. For example, *Daubert's* application during a summary judgment motion in a "toxic tort" may be quite different from a motion where criminal defendants seek to exclude the state's forensic testimony. The growing *Daubert* literature finds this split to be real, finding some evidence that admissibility standards have tightened in civil cases<sup>7</sup> while remaining unchanged in criminal ones.<sup>8</sup> My

<sup>6</sup> J.K. ROWLING, *HARRY POTTER AND THE SORCERER'S STONE* 207 (Scholastic Press 1998). The quote in the original text must be read backwards to understand its meaning. Bathrobe's Harry Potter in Chinese, Japanese & Vietnamese Translation, Treatment of Puns and Word Play in Translating Harry Potter (Chinese, Japanese, and Vietnamese): The Mirror of Erised, <http://www.cjvlang.com/Hpotter/wordplay/erised.html> (last visited Mar. 11, 2009).

<sup>7</sup> See Margaret A. Berger, *What Has a Decade of Daubert Wrought?*, 95 AM. J. PUB. HEALTH S59, S64 (2005), available at <http://www.ajph.org/cgi/content/full/95/S1/S59>; Christina L. Studebaker et al., *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the Daubert Decision*, 8 PSYCHOL. PUB. POL'Y. & L. 251, 251, 301 (2002); Ronald L. Melnick, *A Daubert Motion: A Legal Strategy to Exclude Essential Scientific Evidence in Toxic Tort Litigation*, 95 AM. J. PUB. HEALTH S30, S30, S31, S34 (2005), available at <http://www.ajph.org/cgi/content/full/95/S1/S30>. I leave for others arguments over whether the impact in civil cases is the result of legal constraints imposed by *Daubert*, the increased attention to expert testimony that *Daubert* may have provided, or external changes, such as an increasingly conservative federal judiciary, that took place around the same time-frame. See Jeremy Buchman, *The Effects of Ideology on Federal Trial Judges' Decisions to Admit Scientific Expert Testimony*, 35 AM. POL. RES. 671, 671, 673-74 (2007); Edward K. Cheng & Albert H. Yoon, *Does Frye or Daubert Matter? A Study of Scientific Admissibility Standards*, 91 VA. L. REV. 471, 503-05 (2005).

<sup>8</sup> Simon A. Cole, *Grandfathering Evidence: Fingerprint Admissibility Rulings From Jennings to Llera Plaza and Back Again*, 41 AM. CRIM. L. REV. 1189, 1274-75 (2004); Robert Epstein, *Fingerprints Meet Daubert: The Myth of Fingerprint "Science" is Revealed*, 75 S. CAL. L. REV. 605, 647-52 (2002); Paul C. Giannelli, *The Supreme Court's "Criminal" Daubert Cases*, 33 SETON HALL L.

point is a broader one: since *Daubert* neither constrains nor guides judicial behavior, we must look beyond doctrinal analysis to understand what takes place when expert testimony is on trial.

If I am correct, *Daubert* scholarship would greatly benefit empirical models of judicial behavior. While *Daubert* does not lack for scholarly attention,<sup>9</sup> empirical research on *Daubert*, whether descriptive or predictive, has been quite limited in relation to the whole. In a recent survey of work on *Daubert*, Saks and Faigman<sup>10</sup> found only seven empirical studies of admissibility patterns and the factors that might influence judicial decision-making.<sup>11</sup> Much of the legal literature regarding admissibility is geared towards normative discussions about the philosophy of science, institutional arguments about the courts' ability to assess expert testimony, and the abstract merits and deficiencies of particular admissibility regimes. Though undoubtedly important, this array of arguments would be well complemented by widespread empirical analysis of *Daubert* decisions at the trial court level, as well as by studies which attempt to assess the impact and significance of particular variables—beyond the dicta—that might influence the outcomes of admissibility decisions.

The outline of this argument is as follows. In Part II, I briefly examine the general problems of epistemology and judicial capacity any admissibility regime must face, and trace how *Daubert* skirts taking a clear stance on either issue. In Part III, I develop my argument that *Daubert* leads to local constructions of reliability rather than establishing a global one. Lacking effective institutional oversight, a formal decision rule, or a

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REV. 1071, 1111 (2003); Peter J. Neufeld, *The (Near) Irrelevance of Daubert to Criminal Justice and Some Suggestions for Reform*, 95 AM. J. PUB. HEALTH S107, S109 (2005), available at <http://www.ajph.org/cgi/content/full/95/S1/S107>; D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?*, 64 ALB. L. REV. 99, 143, 149 (2000).

<sup>9</sup> According to the author's research, a simple keyword search of "Daubert" among the law review articles in LEXIS NEXIS returns over three thousand hits.

<sup>10</sup> David L. Faigman et al., *Check Your Crystal Ball at the Courthouse Door, Please: Exploring the Past, Understanding the Present, and Worrying About the Future of Scientific Evidence*, 15 CARDOZO L. REV. 1799 (1994) (Faigman is a professor of law at the University of California, Hastings College of Law, and Saks is a professor of law at the University of Iowa College of Law).

<sup>11</sup> Michael J. Saks & David L. Faigman, *Expert Evidence After Daubert*, 1 ANN. REV. L. & SOC. SCI. 105, 120–25 (2005).

shared understanding of either the stringency of the admissibility standard or the proper epistemology behind it, *Daubert* decisions take place in a position of considerable judicial autonomy. Accepting that judges may be guided or even constrained by local, on-point precedent for specific areas of expert testimony, we still need explanations for how local constructions of reliability develop in the first place. When assessing the reliability of new types of expertise such as using fMRI to detect lies, these explanations become vital.

In Part IV, I survey the political science, empirical legal studies, and sociology of science literatures to glean potential variables for a decision model of admissibility decisions. Judges undoubtedly care about the reliability of expert testimony, but their modes of analyses are as likely to be intuitive as deliberate,<sup>12</sup> assessing reliability through heuristics such as the identity of the litigant or the reaction of professional and academic interest groups. I also consider how judges might fear that particular *Daubert* outcomes would negatively affect court institutions, such as increasing caseload, or how some forms of expert testimony may face special burdens to admission because they appear to challenge the empirical foundations of the courts themselves. For example, in appellate-level *Daubert* decisions regarding the defendants' attempts to introduce eyewitness expert testimony, some judges worried that such testimony might threaten the right of the jury to assess witness credibility.<sup>13</sup> Finally, Part V concludes the article by briefly noting an important roadblock for future empirical research on *Daubert*, namely the collection of representative data.

## II. ADMISSIBILITY "REGIMES": A THEORETICAL FRAMEWORK

### *A. Epistemology and Judicial Capacity in Assessing Expert Testimony*

American legal jurisdictions are paternalistic when it comes to the admission of evidence, expert or otherwise.<sup>14</sup> Neither truth

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<sup>12</sup> Chris Guthrie et al., *Blinking on the Bench: How Judges Decide Cases*, 93 CORNELL L. REV. 1, 43 (2007).

<sup>13</sup> *United States v. Hall*, 165 F.3d 1095, 1107 (7th Cir. 1999); *United States v. Amador-Galvan*, No. 96-10137, 1997 U.S. App. LEXIS 5320, at \*4-5 (9th Cir. Mar. 14, 1997); *United States v. Brien*, 59 F.3d 274, 277 (1st Cir. 1995).

<sup>14</sup> Joseph Sanders, *Kumho and How We Know*, 64 LAW & CONTEMP. PROBS. 373, 406-07 (2001).

nor fairness are best served, our legal system holds, by a *laissez-faire* presentation of any evidence various litigants might wish to submit. Judges instead employ a ponderous set of filters and rules in hopes of shielding decision-makers from their own cognitive biases.<sup>15</sup>

This gate-keeping process becomes dramatically more difficult when expert testimony is assessed. The justification for judicial gate-keeping of expert testimony is similar to the general one: juries lack the training and awareness of their own perceptual and cognitive errors to separate bad science from good. Expert testimony, however, disrupts the standard assumption of special judicial competence, as judges may be no better equipped than juries in determining methodological quality. This well-known dictum, often attributed to Learned Hand, appears insoluble: if the legal system could adequately discern the validity of expert opinions, it should not need that testimony in the first place.<sup>16</sup> Given this paradox, any legal regime designed to assess expert testimony will be imperfect. Absent the wholesale admission of all proffered expertise, however, some test must be adopted.

The choice of potential admissibility regimes from alternatives such as the “market test,”<sup>17</sup> the general acceptance test from *Frye v. United States*,<sup>18</sup> or *Daubert* depend in large part on two criteria: the nature of “science” the legal system envisions and the capability of judges to determine whether the evidence meets the chosen criteria.<sup>19</sup> Selecting an epistemology to ground an

<sup>15</sup> This central assumption regarding the degree of juror biases—at least relative to the biases of judges—has come under question. See, e.g., Luke M. Froeb & Bruce H. Kobayashi, *Naive, Biased, Yet Bayesian: Can Juries Interpret Selectively Produced Evidence?*, 12 J.L. ECON. & ORG. 257, 257 (1996).

<sup>16</sup> See, e.g., Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 54 (1902). Hand’s concern dealt primarily with juries, but the problem would apply to any trier of fact not versed in the substantive field of expertise at hand.

<sup>17</sup> This regime permitted expert opinions to be admitted in court if the opinion had been validated by the market in some way, whether because others had paid that expert in private endeavors, or because that expert claim engendered a product or service consumers had purchased. Faigman et al., *supra* note 10, at 1803–04.

<sup>18</sup> *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923).

<sup>19</sup> See, e.g., David S. Caudill & Richard E. Redding, *Junk Philosophy of Science?: The Paradox of Expertise and Interdisciplinarity in Federal Courts*, 57 WASH. & LEE L. REV. 685, 689, 703, 764–65 (2000); CARL F. CRANOR, REGULATING TOXIC SUBSTANCES: A PHILOSOPHY OF SCIENCE AND THE LAW 55–56 (Oxford University Press 1993); Susan Haack, *Trial and Error: The Supreme Court’s Philosophy of Science*, 95 AM. J. PUB. HEALTH S66, S70–S71 (2005); IAN HACKING, THE SOCIAL CONSTRUCTION OF WHAT? 32–33, 61–62 (Harvard

admissibility regime is a difficult task, exacerbated by the sheer range of argument regarding whether scientific findings are “real.” At one end of this spectrum, philosophers such as Comte have proffered an almost naïve faith in scientists to deduce the nature of the universe from methods that transcend all problems of culture, ideology, and practicality.<sup>20</sup> At the other end, epistemological anarchists offer the proposition that science bears little if any connection to reality, its findings instead wholly constructed by society.<sup>21</sup> Between these poles of naïve positivism and anarchism lie two more feasible epistemologies for courts to adopt: realism and constructivism.<sup>22</sup> Realists believe that scientists do reveal an underlying reality through the scientific method, at least in probabilistic terms. Constructivists, by contrast, contend that scientific findings are substantially dependent on the culture and institutions that produce them.<sup>23</sup> For constructivists, idealized notions of scientific production ignore the obstacles posed by cultural assumptions, religious teachings, interest group politics, disciplinary disputes, ideological beliefs, personal interactions, conflicts of self-interest, the desire for fame, and the hanging sword of tenure.<sup>24</sup> Realizing the impact of these factors, constructivists say, should lead one to displace the reification of scientific methodology with the realization that some, even most research findings result from social factors.<sup>25</sup> To paraphrase Shelia Jasanoff, legal actors should abandon the notion that there are clear definitions of “good science” by which judges may separate inadequately “scientific” opinions from reliable expert testimony.<sup>26</sup>

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University Press 1999); PETER W. HUBER, *GALILEO'S REVENGE: JUNK SCIENCE IN THE COURTROOM* 14–17 (BasicBooks 1991).

<sup>20</sup> See AUGUSTE COMTE, *THE POSITIVE PHILOSOPHY OF AUGUSTE COMTE* 25–26 (Harriet Martineau trans., Calvin Blanchard 1855).

<sup>21</sup> See PAUL FEYERABEND, *AGAINST METHOD: OUTLINE OF AN ANARCHISTIC THEORY OF KNOWLEDGE* 17, 180–81, 295 (Humanities Press 1975).

<sup>22</sup> See Caudill & Redding, *supra* note 19, at 688, 752, 756; Margaret G. Farrell, *Daubert v. Merrell Dow Pharmaceuticals, Inc.: Epistemology and Legal Process*, 15 *CARDOZO L. REV.* 2183, 2185, 2193, 2198, 2206–07 (1994).

<sup>23</sup> SHEILA JASANOFF, *SCIENCE AT THE BAR: LAW, SCIENCE, AND TECHNOLOGY IN AMERICA* 22, 224–26 (Harvard University Press 1995).

<sup>24</sup> *Id.* at 206–09; Sheila Jasanoff, *What Judges Should Know About the Sociology of Science*, 32 *JURIMETRICS J.* 345, 346–47 (1992).

<sup>25</sup> JASANOFF, *supra* note 23, at 52.

<sup>26</sup> *Id.* at XIII–XIV. Though this remains sound advice, it is unclear exactly how naïve judges are in practice about such claims. Though a simplistic reliance on tests such as those in the *Daubert* dicta might raise this critique, historical studies of judges and expert testimony suggest judges might not be so

There is little evidence to suggest that either federal judges or members of Congress explicitly considered epistemology during the choice or creation of our admissibility regimes. The *Daubert* court addresses the issue only in a brief and haphazard manner, as I will argue below.<sup>27</sup> Regardless, evidentiary regimes may still be properly analyzed from an epistemological standpoint, since their tests and guidelines often adopt a particular vision of science whether or not that was their authors' intent.

Apart from epistemology, support for a particular admissibility regime also depends on whether courts have the institutional capacity to implement a particular epistemological vision. A realist might believe that the scientific method haltingly uncovers fundamental reality and yet argue that judges have little or no ability to assess this process. If judges—or the court system in general—lack the expertise or will to incorporate mainstream scientific analysis into admissibility decisions, a deferential evidentiary standard might be the only alternative.<sup>28</sup>

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simplistic. See TAL GOLAN, *LAWS OF MEN AND LAWS OF NATURE: THE HISTORY OF SCIENTIFIC EXPERT TESTIMONY IN ENGLAND AND AMERICA* 259–60, 263–64 (Harvard University Press 2004) (discussing the complexities involved in a judge's gate-keeper role).

<sup>27</sup> *Daubert* makes Popperian falsification the central marker of “good science.” See discussion *infra* Part II. Though important, and particularly useful, for rejecting tautologies, modern philosophers of science no longer see falsification as indispensable to the scientific method. See, e.g., Caudill & Redding, *supra* note 19, at 738–39; Haack, *supra* note 19, at S67–S69; Gary Edmond & David Mercer, *Keeping Junk History, Philosophy and Sociology of Science Out of the Courtroom: Problems with the Reception of Daubert v. Merrell Dow Pharmaceuticals Inc.*, 20 U. NEW S. WALES L.J. 48, 51, 54–55 (1997).

<sup>28</sup> Katherine M. Atikian, *Nasty Medicine: Daubert v. Merrell Dow Pharmaceuticals, Inc. Applied to a Hypothetical Medical Malpractice Case*, 27 LOY. L.A. L. REV. 1513, 1556 (1994); Paul S. Milich, *Controversial Science in the Courtroom: Daubert and the Law's Hubris*, 43 EMORY L.J. 913, 917–19, 926 (1994); Craig Lee Montz, *Trial Judges As Scientific Gatekeepers After Daubert, Joiner, Kumho Tire, and Amended Rule 702: Is Anyone Still Seriously Buying This?*, 33 UWLA L. REV. 87, 104–07, 114–15 (2001). On a similar note, if the jury does not suffer from cognitive errors, or at least suffers no worse than the judge who would be gate-keeper, perhaps the evidentiary test should be relaxed. See, e.g., Sanja Kutnjak Ivkovi & Valerie P. Hans, *Jurors' Evaluations of Expert Testimony: Judging the Messenger and the Message*, 28 LAW & SOC. INQUIRY 441, 441–42, 445–46 (2003); NEIL VIDMAR, *MEDICAL MALPRACTICE AND THE AMERICAN JURY: CONFRONTING THE MYTHS ABOUT JURY INCOMPETENCE, DEEP POCKETS, AND OUTRAGEOUS DAMAGE AWARDS* 178, 181–82 (The University of Michigan Press 1995). Though there are fine studies of how jurors process expert testimony, such as for eyewitness expert testimony, see, e.g., BRIAN L. CUTLER & STEVEN D. PENROD, *MISTAKEN IDENTIFICATION: THE EYEWITNESS, PSYCHOLOGY, AND THE LAW* 216–218, 224 (Cambridge University Press 1995); ELIZABETH F. LOFTUS, *EYEWITNESS TESTIMONY* 191, 200–01 (Harvard University

One of the best known statements of concern over active gatekeeping roles comes from Justice Rehnquist's opinion (concurring in part and dissenting in part) in *Daubert*:

I defer to no one in my confidence in federal judges; but I am at a loss to know what is meant when it is said that the scientific status of a theory depends on its "falsifiability," and I suspect some of them will be, too. I do not doubt that Rule 702 confides to the judge some gatekeeping responsibility in deciding questions of the admissibility of proffered expert testimony. But I do not think it imposes on them either the obligation or the authority to become amateur scientists in order to perform that role.<sup>29</sup>

Rehnquist may sell judges short, particularly if the choice is framed not as judges or nothing, but instead as judges or juries. Judges are "repeat players"<sup>30</sup> who will encounter similar claims of expertise over multiple occasions, and will almost certainly have more experience than a jury in evaluating the claims of expert witnesses. Moreover, as repeat players, judges have educational and developmental resources available to them that juries do not, as a judge who wishes to understand the PCR method for DNA typing may turn to the relevant article from the excellent *Reference Manual on Scientific Evidence*,<sup>31</sup> or attend a workshop on the same.

*Daubert*, I believe, neither provides a clear picture of epistemology nor realistically weighs the burdens it imposes on judicial institutions.

#### *B. The Federal Standard: Daubert v. Merrell Dow Pharmaceuticals*

At present, most American legal jurisdictions have adopted one of two admissibility regimes: either some version of the general acceptance test (the "*Frye*" regime), or some version of *Daubert*.<sup>32</sup> This leads to the tendency to label jurisdictions as having "*Frye*"

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Press 1979), and for DNA evidence, see, e.g., Jason Schklar & Shari Seidman Diamond, *Juror Reactions to DNA Evidence: Errors and Expectancies*, 23 LAW & HUM. BEHAV. 159, 159 (1999), far more research is needed.

<sup>29</sup> *Daubert*, 509 U.S. at 600–01.

<sup>30</sup> See generally, Marc Galanter, *Why the "Haves" Come Out Ahead: Speculations on the Limits of Legal Change*, 9 LAW & SOC'Y REV. 95, 97 (1974).

<sup>31</sup> DAVID H. KAYE & GEORGE F. SENSABAUGH, JR., *Reference Guide on DNA Evidence*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 485, 497 (Federal Judicial Center ed., 2d ed. 2000).

<sup>32</sup> See David E. Bernstein & Jeffrey D. Jackson, *The Daubert Trilogy in the States*, 44 JURIMETRICS 351, 351 (2004) (noting the diversity existing in jurisdictions adopting either the *Frye* or *Daubert* test).

or “*Daubert*” regimes, though this binary categorization admittedly conflates important differences.<sup>33</sup> The *Frye* regime, taking its name from a 1923 federal criminal case in which the United States challenged the defendant’s proffer of a polygraph test as evidence of his innocence, simply asks whether the expert testimony at hand is “generally accepted” by the scientific community at hand.<sup>34</sup> At that time, courts often judged the admissibility of expert testimony according to its utility in the marketplace; a technique, idea, or concept that was reliable enough to be consumed, used, or purchased was reliable enough for courts.<sup>35</sup> Aside from the rather heroic assumptions such a test makes about consumers,<sup>36</sup> its criteria had little relevance for forensic techniques, whose only “consumers” were law enforcement and the court system. Faced with a defendant who claimed a systolic blood pressure test could demonstrate his innocence, the court ruled that this forerunner of the polygraph had not been generally accepted in the scientific community, and thus was not fit for admission.<sup>37</sup> Though the *Frye* case was

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<sup>33</sup> *Id.* at 365. As he finds, a state might accept a *Daubert*-like admissibility test but refuse to accept *Daubert*’s progeny, *Joiner* and *Kumho*. A state might also exempt certain kinds of evidence from an admissibility regime, or adopt different standards of admissibility for criminal and civil courts. Finally, a state might remain a “*Frye*” state but find its actual use of the general acceptance test altered by *Daubert*’s influence. Bernstein gives a thorough breakdown of these various categories. *Id.*

<sup>34</sup> *Frye*, 293 F. at 1013–14.

<sup>35</sup> Faigman et al., *supra* note 10, at 1804; DAVID L. FAIGMAN ET AL., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY § 1:3, at 7 (2005-06 ed., Thomson West 2006); Michael J. Saks, *Merlin and Solomon: Lessons from the Law’s Formative Encounters with Forensic Identification Science*, 49 HASTINGS L.J. 1069, 1073–74 (1998). A Rhode Island chief justice from this time period made the case for this regime when he remarked, “[i]ndeed, knowledge of any kind, gained for and in the course of one’s business as pertaining thereto, is precisely that which entitles one to be considered an expert . . .” *Buffum v. Harris*, 5 R.I. 243, 251 (R.I. 1858).

<sup>36</sup> As Faigman, Porter, and Saks note:

But though it might be practical and easily administered, the test of commercial value is a poor one. Its major weaknesses are perhaps more obvious today than they were a century or two ago. The market not only selects for validity, it selects also for entertainment, desire, wishful thinking, hope, sometimes even desperation. These are not without their value, but they are not good proxies for what courts are looking for in expert testimony. If the marketplace approves, as it does, of astrologers, sellers of phony cancer cures, and guides to new age vortexes, are those therefore good enough to provide guidance in a courtroom? The marketplace test is incapable of distinguishing astrophysics from astrology.

Faigman et al., *supra* note 10, at 1805.

<sup>37</sup> *Frye*, 293 F. at 1014.

largely ignored for decades, it became a leading candidate for the national admissibility regime in the 1970s, perhaps in reaction to the increasing debate over the use of scientific evidence in the courtroom.<sup>38</sup>

The *Frye* regime transferred judicial deference from the marketplace to the scientific community. On the question of epistemology, *Frye* takes a simplistic realist position, putting faith in scientific communities to separate good science from bad.<sup>39</sup> There is no recognition of the social and cultural factors that may affect scientific claims, perhaps in line with the greater influence positivism held in the academy at the time *Frye* was written. As for the question of institutional capacity, the regime largely absolves judges from gate-keeping; their only task is to ascertain the extent of the relevant scientific community and the degree of consensus within that community about the reliability of the expert testimony before the court. *Frye* is properly viewed as a “conservative” admissibility regime, both because it will take time for new expert testimony to be generally accepted by at least a plurality of the relevant expert community,<sup>40</sup> and because once expert testimony has gathered a significant degree of consensus it will become hard to exclude.<sup>41</sup>

*Frye*'s virtue is its simplicity and the modest demands it makes on judicial capacity. Its great vice, unsurprisingly, is that same simplicity. A general acceptance test tells us very little about the proper scope of the scientific community that constitutes that group whose acceptance is needed. All things being equal, a smaller group of scientists who are heavily invested in a technique or opinion will be quicker to support more controversial expert claims than a broader community. One can thus manipulate *Frye* by broadening the scope of the relevant community to the point where general acceptance is unlikely, or narrowing it to the point where the chances of agreement

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<sup>38</sup> Sanders, *supra* note 14, at 376; Saks, *supra* note 35, at 1076.

<sup>39</sup> See Faigman et al., *supra* note 10, at 1805 (noting that the marketplace test was incapable of distinguishing the expert from the knowledge).

<sup>40</sup> E. Donald Elliott, *Toward Incentive Based Procedure: Three Approaches for Regulating Scientific Evidence*, 69 B.U. L. REV. 487, 495 (1989). At least one scholar has argued that *Frye* is so restrictive that its use might more quickly lead to evidentiary reform in the statutory sphere. In other words, she would gamble that *Frye* would keep out so much useful and reliable expert testimony that Congress or state legislatures would be moved to institute a more liberal admissibility regime.

<sup>41</sup> Saks & Faigman, *supra* note 11, at 119.

increase. The problem of scope worsens when addressing forensic testimony, where the expert community is likely limited to the practitioners themselves. For example, fingerprint experts will be the most capable group of individuals for ascertaining what fingerprint techniques are generally accepted. However, those same experts are unlikely to entertain claims that their enterprise lacks scientific rigor or validity.<sup>42</sup>

The stronger critique of *Frye* is that deference to expert agreement is no substitute for an actual analysis of evidentiary worth. The history of science is replete with expert communities who favored theories that scientists now agree lack validity.<sup>43</sup> If one accepts that scientific results are at least in part socially constructed, that whether for cultural, religious, financial, or institutional reasons expert communities do not always simply work towards truth, then an admissibility regime based on deference will inevitably admit unworthy expert testimony. Indeed, without some degree of independent gate-keeping, the *Frye* test can become an absurdity. If a litigant tendered astrological evidence in support of a factual claim, would the community of astrologers be consulted for general acceptance? Or would the judge simply shift his analysis to astronomers or scientists in general to ensure the expertise is excluded? Either way, the example demonstrates the problem with equating expert agreement with validity, particularly for small or specialized expert communities. The problem exists even in more legitimate debates—if doctors and epidemiologists disagree about the proper methods of inferring causation for medical problems, whose opinions should constitute the *Frye* analysis?

Apart from its theoretical problems, *Frye* faced a more concrete difficulty following the 1975 promulgation of the Federal Rules of Evidence. *Frye*, viewed as a narrow and conservative admissibility regime, seemingly conflicted with the Rules' liberal

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<sup>42</sup> See Cole, *supra* note 8, at 1202 (showing that the difference between eyewitness identification and fingerprint identification is that fingerprint identification is completed by experts); Epstein, *supra* note 8, at 651; D. H. Kaye, *The Non-science of Fingerprinting: United States v. Llera-Plaza*, 21 QUINNIPIAC L. REV. 1073, 1087 (2003).

<sup>43</sup> For example, one might cite phrenology (the study of how head shape indicates character and intelligence), vile theories of racial difference, and arguments that one's body measurements serve as indicators of criminal tendencies. That said, a defender of *Frye* might reasonably ask whether an active judicial gate-keeper, even within the crucible of an idealized adversarial process, would have been any more successful in exposing problems with these theories.

attitude towards the admission of evidence.<sup>44</sup> Despite this apparent conflict, the precise requirements of the new rules of evidence were in doubt.<sup>45</sup> The initial version of Federal Rule of Evidence 702, which dealt most directly with expert testimony, stated that, “[i]f 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>46</sup> 702 clearly required that expert testimony be relevant and helpful, and that the expert who tendered it be qualified. What was not clear, however, was whether the rule’s phrasing inferred a “reliability” requirement. On the one hand, its plain meaning did not present a reliability requirement.<sup>47</sup> On the other hand, the rule’s use of the term “scientific knowledge” may reasonably be read to require some baseline of “scientific” quality in order to earn the name.<sup>48</sup> The federal circuits reflected this split of opinion, as some rejected *Frye* as too restrictive in light of the Federal Rules,<sup>49</sup> some read *Frye* into Rule 702, aiming for a more

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<sup>44</sup> Sanders, *supra* note 14, at 376–77.

<sup>45</sup> See *Daubert*, 509 U.S. at 579 (illustrating the clash between the Federal Rules of Evidence and the *Frye* test).

<sup>46</sup> FED. R. EVID. 702 (1975) (amended 2000). In 2000, Federal Rule 702 was updated, probably to bring it into accordance with the *Daubert* decision. The new text reads:

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. Some scholars argue that the amended 702 creates a more stringent standard for expert testimony than *Daubert* itself, though there is little evidence that federal judges agree on this proposition. See, e.g., David Bernstein, *Courts Refusing to Apply Federal Rule of Evidence 702*, *THE VOLOKH CONSPIRACY*, May 6, 2006, [http://volokh.com/archives/archive\\_2006\\_04\\_30-2006\\_05\\_06.shtml](http://volokh.com/archives/archive_2006_04_30-2006_05_06.shtml) (discussing how federal district courts are ignoring Rule 702 and following previous court precedent decided before 2000).

<sup>47</sup> Brief for Association of Trial Lawyers of America as Amicus Curiae Supporting Petitioner at 8, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1992) (No. 92-102).

<sup>48</sup> Brief for American Insurance Association as Amicus Curiae Supporting Respondent at 2, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102).

<sup>49</sup> See, e.g., *United States v. Baller*, 519 F.2d 463, 466 (4th Cir. 1975) (discussing how there must be an objective procedure for determining

restrictive standard,<sup>50</sup> and at least one circuit, foreshadowing *Daubert*, developed its own standards for reliability.<sup>51</sup>

In order to resolve this circuit conflict, the Supreme Court chose to hear *Daubert v. Merrill Dow Pharmaceuticals*, a Ninth Circuit appeal in which the Daubert family had sued Merrill (later purchased by Dow), alleging its anti-nausea drug Bendectin had caused serious birth defects in their unborn child.<sup>52</sup> The *Daubert* case came at the tail end of a long series of Bendectin torts in both state and federal court, whose progress came alongside considerable legal, scientific, and media attention.<sup>53</sup> While Bendectin plaintiffs had several early jury successes (Merrell made for a particularly unfavorable defendant, given its reticence to divulge its own research and its prior involvement with other unsafe drugs such as thalidomide and MER/29), ensuing epidemiological studies slowly but surely built a body of scholarship that found no demonstrable correlation between the use of Bendectin and birth defects.<sup>54</sup> Both the trial court and the Ninth Circuit relied on the general

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admissibility of scientific opinion); *United States v. Williams*, 583 F.2d 1194, 1197–98 (2d Cir. 1978) (discussing why *Frye* is better than *Daubert* to determine the admissibility of evidence). Notably, these early cases rejected a more stringent admissibility test in the context of criminal cases, where admissibility rules for the prosecution remain relatively lax.

<sup>50</sup> See, e.g., *Dang Vang v. Vang Xiong X. Toyed*, 944 F.2d 476, 481–82 (9th Cir. 1991) (illustrating how the general acceptance requirement of *Frye* is read into Rule 702); *United States v. Kozminski*, 821 F.2d 1186, 1210 (6th Cir. 1987) (illustrating how courts read the *Frye* test into Rule 702).

<sup>51</sup> *United States v. Downing*, 753 F.2d 1224, 1226 (3d Cir. 1985).

<sup>52</sup> *Daubert v. Merrell Dow Pharm., Inc.*, 951 F.2d 1128, 1129 (9th Cir. 1991), *rev'd* 509 U.S. 579 (1993).

<sup>53</sup> See JOSEPH SANDERS, *BENDECTIN ON TRIAL: A STUDY OF MASS TORT LITIGATION* ix, 23 (The University of Michigan Press 1998) (discussing how Bendectin litigation produced a long series of trials and court opinions).

<sup>54</sup> *Id.* at 40. Forty such epidemiological studies were completed between 1963 and 1994. None of these studies found a significant correlation between the drug and the defects, though six found that Bendectin might be a teratogen but lacked sufficient evidence to draw a conclusion. While some of the early studies lacked adequate statistical power to be truly persuasive, the body of work became more sophisticated and convincing over time. Bendectin plaintiffs were increasingly forced to rely on animal studies and structural analyses to make their case for causation. Animal studies are dubious evidence of causation because of the difficulties of extrapolating animal results to humans, as well as because the animals in question often received atypical dosage of the substance in question (reactions to toxic chemicals are not always linear). Structural analyses compare the structure of known tetraogens to those of the drug in question, but as minute differences in structure can lead to very different physiological reactions, their use in establishing causation is also limited. *Id.* at 60–62, 64.

acceptance test from *Frye* in their analysis; the Ninth Circuit also read a peer review requirement into Rule 702.<sup>55</sup> Finding the Dauberts' expert testimony inadequate, the trial court ruled to exclude it, leaving the plaintiffs subject to summary judgment.<sup>56</sup> The Ninth Circuit affirmed.<sup>57</sup> The Dauberts appealed to the Supreme Court, arguing that the Ninth Circuit's interpretation of *Frye* contradicted the liberal emphasis of the Federal Rules of Evidence, and that as statutory law the Rules superseded the common-law *Frye*.<sup>58</sup>

The Supreme Court unanimously agreed with the Dauberts that Federal Rule 702 supplanted *Frye* as the standard for expert admissibility, arguing that the more rigid general acceptance test did not square with the "liberal thrust" of the Federal Rules.<sup>59</sup> However, the Court also agreed with the *amicae* who supported Merrell Dow that Rule 702 imposed a reliability requirement.<sup>60</sup> While the Ninth Circuit's construal of reliability was too narrow, Blackmun agreed that FRE 702 bestowed a "gatekeeping" responsibility on the trial judge to ensure that all expert testimony was reliable, relevant, helpful, and "fit" the issue at hand.<sup>61</sup>

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<sup>55</sup> *Daubert*, 509 U.S. at 583–84.

<sup>56</sup> *Daubert*, 951 F. 2d at 112–31. The Dauberts' expert witnesses had either reanalyzed previously unsupportive epidemiological data or relied upon animal studies and case reports as the basis for their testimony. The trial judge ruled that their methods were not generally accepted by epidemiologists for assessing causation (though they were acceptable for risk assessment by a body such as the EPA), and that their opinions had not been peer-reviewed.

<sup>57</sup> *Id.* at 1131.

<sup>58</sup> *Daubert*, 509 U.S. at 587.

<sup>59</sup> *Id.* at 588 (quoting *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 169 (1988)).

<sup>60</sup> Brief of the American Insurance Association as Amici Curiae in Support of Respondent, at \*17–18, \*22, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102); Brief of the Pharmaceutical Manufacturers Association as Amicus Curiae in Support of Respondent, at \*30–31, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102); Brief of the New England Journal of Medicine, Journal of the American Medical Association, and Annals of Internal Medicine as Amici Curiae in Support of Respondent, at \*20–21, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102); Brief for the American Association for the Advancement of Science and the National Academy of Sciences as Amici Curiae in Support of Respondent, at \* 5, \*6, \*32, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102); Brief for the United States as Amicus Curiae Supporting Respondent, at \*19, 20, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102).

<sup>61</sup> *Daubert*, 509 U.S. at 591, 597. The last criterion is somewhat ambiguous, but has generally been held to mean that the expert testimony must not only be relevant but properly applied to the facts at hand. In Blackmun's words:

The most important task for federal judges, uneasy with their new responsibilities, was parsing Blackmun's definition of "reliability."<sup>62</sup> Rightly contending that methodological quality defied a straightforward definition, Blackmun said that the judicial assessment of reliability should be flexible, and refrained from creating tests or rules that would constrain how reliability should be judged.<sup>63</sup> However, perhaps recognizing that many federal judges would need some sort of guidance, he suggested four criteria as dicta to guide lower courts in their assessment. These "suggestions" were as follows:

Can the opinion be falsified?

Has the opinion appeared in a peer-reviewed journal?

Does the opinion present an error rate?

Is the opinion generally accepted among the scientific community?<sup>64</sup>

A brief examination of these factors shows the influence of the philosopher Karl Popper,<sup>65</sup> the importance of peer review despite its rejection as a formal requirement,<sup>66</sup> and the return of *Frye*,

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The study of the phases of the moon, for example, may provide valid scientific "knowledge" about whether a certain night was dark, and if darkness is a fact in issue, the knowledge will assist the trier of fact. However (absent creditable grounds supporting such a link), evidence that the moon was full on a certain night will not assist the trier of fact in determining whether an individual was unusually likely to have behaved irrationally on that night.

*Id.* at 591.

Quoting Judge Becker from *In re Paoli*, 35 F.3d 717, 743 (3d Cir. 1994), Professor Sanders helpfully points to Judge Becker's opinion from *Paoli*: "[A]nimal studies may be methodologically acceptable to show that chemical X increases the risk of cancer in animals, but they may not be methodologically acceptable to show that chemical X increases the risk of cancer in humans." Sanders, *supra* note 14, at 378 n.46.

<sup>62</sup> *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311, 1316 (9th Cir. 1995). The law unfortunately conflates scientific validity and scientific reliability, as well as general methodological quality, under the term "reliability."

<sup>63</sup> *Daubert*, 509 U.S. at 593, 594.

<sup>64</sup> *Id.* at 593–94. When one compares the text of the Solicitor General's brief with the Court's opinion, the influence of the former is hard to miss. See Brief for the United States as Amicus Curiae Supporting Respondent, at \*21–22, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (No. 92-102) (discussing criteria for assessing admissibility of scientific evidence).

<sup>65</sup> For a summary of what some philosophers of science see as *Daubert's* overreliance on falsification, see Edmond & Mercer, *supra* note 27, at 81–89, 93.

<sup>66</sup> For a summary of the problems with using peer review as a quality control for methodology, see SHEILA JASANOFF, *THE FIFTH BRANCH: SCIENCE ADVISERS AS POLICYMAKERS* 61–83 (Harvard University Press 1990).

though in a supporting role rather than a leading one.<sup>67</sup> Despite the admonition that *Daubert* analyses should remain flexible, some judges understandably rely on these dicta as a four-part test to be applied in the face of unfamiliar expert testimony.<sup>68</sup>

*C. Daubert and the Theoretical Framework: Realist,  
Constructivist, or Neither?*

How does the *Daubert* regime treat the foundational concerns of epistemology and judicial capacity? On epistemology, *Daubert* is simply ambiguous. On one hand, Blackmun's four informal indicators of "good science" expressly ratify the realist position that scientific methodology is the gateway to reliable evidence and accurate decisions. On the other hand, several phrases in the opinion suggest a more constructivist viewpoint.<sup>69</sup> For example, the Court noted imperfections in the very indicia it would later promulgate, such as citing Jasanoff's work on the failures of peer-review,<sup>70</sup> and praised cross-examination as a tool for exposing inconsistencies that scientists—presumably bound by a particular paradigm or their own institutional and scientific interests—might not catch.<sup>71</sup> The adoption of judicial gate-keeping in *Daubert* is itself a nod towards the constructivist position, since it proceeds on the expectation that the litigants'

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<sup>67</sup> The *Daubert* paradigm was clarified by two further Supreme Court decisions: *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 143, 146–47 (1997), which explained the appropriate standard of review for *Daubert* hearings, and *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999), which answered whether *Daubert* was intended to apply to only "scientific" evidence, or to all expert testimony. Together with *Daubert*, the three cases are sometimes referred to as the "Daubert Trilogy." Margaret A. Berger, *The Supreme Court's Trilogy on the Admissibility of Expert Testimony*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 9, 9–10 (LEXIS Publishing, 2d ed. 2000).

<sup>68</sup> *Daubert*, 509 U.S. at 593–94. *But see* Lloyd Dixon & Brian Gill, *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the Daubert Decision*, 8 PSYCHOL. PUB. POL'Y & L. 251, 282, 288, 299 (2002) (showing additional reliability factors). In this study, slightly less than half of *Daubert* decisions used the dicta to measure reliability. However, this finding was not the result of judges using more flexible assessments of reliability, but rather because many judges still relied on more traditional admissibility requirements, such as prejudice or relevance, or because they ignored reliability altogether. *See generally* Jennifer L. Groscup et. al., *The Effects of Daubert on the Admissibility of Expert Testimony in State and Federal Criminal Courts*, 8 PSYCHOL. PUB. POL'Y & L. 339 (2002).

<sup>69</sup> Caudill & Redding, *supra* note 19, at 737–42; Farrell, *supra* note 22, at 2198–208.

<sup>70</sup> JASANOFF, *supra* note 66, at 61.

<sup>71</sup> *Daubert*, 509 U.S. at 596–97.

experts cannot readily separate their scientific claims from their own financial interests.<sup>72</sup>

*Daubert's* epistemology thus appears to be a mix of realism and constructivism, though more as the result of “muddling through” than a deliberate choice by the majority.<sup>73</sup> Certainly, a trial judge who wished to find support for a realist or a constructivist epistemology within *Daubert* could do so. This ambiguity has been criticized as harmfully incoherent,<sup>74</sup> as well as accepted (if not praised) on the grounds that judges have neither the time nor the ability to resolve debates about the nature of science when the philosophy of science itself lacks consensus.<sup>75</sup>

On the question of judicial capacity, *Daubert* may require more of federal judges than they have to give, raising problems the *Frye* regime sidestepped. *Daubert* tells judges, to quote Michael Saks, to “figure out the science [for] yourself.”<sup>76</sup> Beyond Rehnquist’s concern that judges will misunderstand concepts such as falsification, Learned Hand’s dictum remains in full effect.<sup>77</sup> Discerning potential methodological shortfalls in the aforementioned Bendectin litigation would require that the deciding judge have a working knowledge of relative risk, in-vitro studies, epidemiology, structural analysis, statistical significance, the fallacies of temporal association, and the risks of extrapolating from animal studies to human beings. And that covers merely one portion of the substantive expertise in which a generalist trial judge, who likely has had no formal scientific

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<sup>72</sup> *Daubert*, 43 F.3d at 1317. Later refinements of *Daubert* increased the formal recognition of constructivist factors. After the Court remanded the *Daubert* case for reconsideration under the new standard, the trial judge again excluded the plaintiff’s experts under *Daubert*. On appeal, the Ninth Circuit upheld the exclusion, and added to the *Daubert* dicta a further consideration: expert opinions that arose naturally from a scientist’s work should be viewed as more reliable than those which arose during the trial process. The constructivist insight here is straightforward—while experts should be capable of following the scientific method and doing good research when their financial incentives depend on particular conclusions, we are rightly skeptical of their ability to do so. *Id.* at 1317–19.

<sup>73</sup> Sanders, *supra* note 14, at 390 (quoting Jasanoff, *supra* note 23, at 63); Brian Leiter, *The Epistemology of Admissibility: Why Even Good Philosophy of Science Would Not Make for Good Philosophy of Evidence*, 1997 BYU L. REV. 803, 810–12 (1997); David S. Caudill, *Law and Science: An Essay On Links and Socio-Natural Hybrids*, 51 SYRACUSE L. REV. 841, 847 (2001).

<sup>74</sup> Farrell, *supra* note 22, at 2198–207.

<sup>75</sup> Caudill & Redding, *supra* note 19, at 762–66.

<sup>76</sup> Saks, *supra* note 35, at 1139.

<sup>77</sup> See *supra* notes 16 and 29 and accompanying text.

training, must assess the reliability of expertise. Needless to say, one does not need to question the intelligence of federal judges to wonder if they are up to the task.<sup>78</sup> Questions of institutional capacity may be mitigated by repeated exposure to similar *Daubert* motions. Federal judges also have access to training seminars and resources such as the excellent *Reference Manual on Scientific Evidence*,<sup>79</sup> though it remains an open question whether they adequately take advantage of such opportunities.<sup>80</sup>

My larger point is simply that as read, *Daubert's* text does not choose sides in either the ongoing debate between realism and constructivism or in the argument as to whether admissibility should be a liberal or restrictive standard. In the following section, I will explain the likely results of this ambiguity, namely the enhanced autonomy judges gain when applying a precedent lacking both a rule-like structure and a clear message.

### III. THE EMPTY VESSEL: DAUBERT AND THE LOCAL CONSTRUCTION OF RELIABILITY

#### A. Law, Legal Realism, and Judicial Decision-Making

Since the early 20<sup>th</sup> century, political and legal scholars have hotly debated the degree to which the law actually constrains, guides, or shapes legal decision-making.<sup>81</sup> As with arguments regarding epistemology, the range of debate is book-ended by a pair of straw-man arguments. On one end, judges mechanistically interpret statutes and apply legal rules, finding the law without making it. On the other, judges are no more than legislators in black robes, free-wheeling creators of policy who use the law as a cloak to blur their naked use of power. Again moving from the poles of the continuum to the more reasonable middle, one finds two basic schools of thought. Some

<sup>78</sup> Atikian, *supra* note 28, at 1514–15; Paul S. Milich, *Scientific and Technological Evidence: Controversial Science in the Courtroom: Daubert and the Law's Hubris*, 43 EMORY L.J. 913, 918–19 (1994).

<sup>79</sup> REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, *supra* note 31.

<sup>80</sup> A survey of Texas judges, for example, found that seventy percent of the responding judges took “no continuing education or practical business experience in the use and analysis of the reliability of scientific methodology.” See Montz, *supra* note 28, at 111–12.

<sup>81</sup> Steven L. Winter, Foreword: *Foreword: On Building Houses*, 69 TEX. L. REV. 1595, 1595–96 (1991); Scott Altman, *Beyond Candor*, 89 MICH. L. REV. 296, 303–09 (1990).

distance from the latter extreme, one finds the proponents of the “attitudinal model,”<sup>82</sup> inheritors of the legal realist school who argue policy preferences and ideology are the single most important factors in judicial decision-making at the Supreme Court level, and an important factor for lower courts.<sup>83</sup> Their theory is a simple one: laws, constitutional clauses, and precedent are sufficiently indeterminate to allow judges to decide cases according to extra-legal factors, particularly political ideology.<sup>84</sup> This autonomy, it should be noted, requires a lack of meaningful appellate oversight. The attitudinal model works best in courts where institutional constraints are minimized, such as the Supreme Court, where justices with life tenure, no likely career ambitions beyond their current position, and no superiors have little to fear from making any particular decision.<sup>85</sup>

Though the notion that judicial decision-making has a strong ideological component is a consensus position among empirical legal scholars (and perhaps by any serious observer of courts), critics of attitudinalists argue the realists have overreached, often reducing judicial decision-making to a single dimension.<sup>86</sup> This critique has led other scholars to examine alternative models of decision-making, such as examining how judges make strategic decisions to overcome collective action problems, or how court institutions exert an independent effect on decision-

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<sup>82</sup> JEFFREY A. SEGAL & HAROLD J. SPAETH, *THE SUPREME COURT AND THE ATTITUDINAL MODEL* 64–65 (Cambridge University Press 1993). The book can be summed thus: “Rehnquist votes the way he does because he is extremely conservative; Marshall voted the way he did because he is extremely liberal.” *Id.* at 65. It should be noted that the initial claims of attitudinalists—that political ideology overwhelmingly explains judicial behavior—have been dialed down in more recent years. Ideology is likely the most influential factor in Supreme Court decisions—particularly in constitutional and civil liberties cases—but by itself only explains less than one-third of such decisions. Sean Wilson, *The Attitudinal Model, Political Science, Ecological Fallacy and Exaggeration* 2–6 (Aug. 3, 2006) (unpublished manuscript, Pennsylvania State University), available at <http://ssrn.com/abstract=922183>.

<sup>83</sup> See, e.g., BENJAMIN N. CARDOZO, *THE NATURE OF THE JUDICIAL PROCESS* 127–28 (Yale University Press 1921); JEROME FRANK, *COURTS ON TRIAL: MYTH AND REALITY IN AMERICAN JUSTICE* 401–03 (Princeton University Press 1949); JEROME FRANK, *LAW AND THE MODERN MIND* 42, 46, 54–55, 284, 293 (Tudor Pub. Co. 1936).

<sup>84</sup> Wilson, *supra* note 82, at 2–3.

<sup>85</sup> Segal & Spaeth, *supra* note 82, at 69–72.

<sup>86</sup> Richard A. Brisbin, Jr., *Slaying the Dragon: Segal, Spaeth, and the Function of Law in Supreme Court Decision Making*, 40 *AM. J. POL. SCI.* 1004, 1007, 1012 (1996).

making.<sup>87</sup> One promising approach which focuses on precedent as a type of institution views landmark rulings not as rules that constrain behavior, but rather as “legal regimes”<sup>88</sup> that constitute the frameworks and boundaries of decision-making.<sup>89</sup> The authors of this approach have convincingly argued that the Supreme Court voted differently on core speech cases following the creation of the “two-track” “content-neutral[ity]” and “content-based” regime in *Police Dept. of Chicago v. Mosley* and *Grayned v. Rockford*.<sup>90</sup> In other words, while the legal regime of content discrimination does not dictate the result of particular cases or remove the ideological component from such decisions, it has changed the *manner* in which the Justices approach and consider core speech cases, in turn affecting the general pattern of outcomes.<sup>91</sup> In a similar (albeit qualitative) vein, Howard Gillman persuasively contends that legal ideology regarding the proper use of state police powers (here seen as distinct from the standard liberal-conservative continuum along which attitudinalists situate their models) heavily influenced 14<sup>th</sup> amendment jurisprudence between the Civil War and the New Deal.<sup>92</sup> Either a landmark precedent or a persuasive legal ideology, therefore, may temper the standard liberal and

<sup>87</sup> LEE EPSTEIN & JACK KNIGHT, *THE CHOICES JUSTICES MAKE* 57 (CQ Press 1998); Howard Gillman & Cornell W. Clayton, *Beyond Judicial Attitudes: Institutional Approaches to Supreme Court Decision-Making*, in *SUPREME COURT DECISION MAKING* 1, 2–3 (Cornell W. Clayton & Howard Gillman eds., University of Chicago Press 1999).

<sup>88</sup> “Jurisprudential regimes,” for the purposes of this article as elsewhere, are referred to as “legal regimes.” Mark J. Richards & Herbert M. Kritzer, *Jurisprudential Regime in Supreme Court Decision Making*, 96 AM. POL. SCI. REV. 305, 307 n.1 (2002).

<sup>89</sup> *Id.* at 305–07, 315–16.

<sup>90</sup> *Id.* at 310–15. Compare *Police Dep’t of Chicago v. Mosley*, 408 U.S. 92, 96–102 (1972) (using the content-based approach) with *Grayned v. Rockford*, 408 U.S. 102, 113–21 (1972) (using the content-neutral approach).

<sup>91</sup> Richards & Kritzer, *supra* note 88, at 315–16. Richards and Kritzer have successfully replicated this approach for search and seizure Supreme Court decisions centered on *Mapp v. Ohio*, 367 U.S. 643 (1961), as well as establishment clause Supreme Court decisions centered on *Lemon v. Kurtzman*, 403 U.S. 602 (1971). Herbert M. Kritzer & Mark J. Richards, *The Influence of Law in the Supreme Court’s Search-and-Seizure Jurisprudence*, 33 AM. POL. RES. 33, 35–37, 39, 51 (2005); Herbert M. Kritzer & Mark J. Richards, *Jurisprudential Regimes and Supreme Court Decision Making: The Lemon Regime and Establishment Clause Cases*, 37 L. & SOC’Y REV. 827 *passim* (2003).

<sup>92</sup> See HOWARD GILLMAN, *THE CONSTITUTION BESIEGED: THE RISE AND DEMISE OF LOCHNER ERA POLICE POWERS JURISPRUDENCE* 14, 62–73 (Duke University Press 1993). Howard Gillman is a faculty member at University of California, a nationally recognized scholar, and an expert on political and judicial affairs.

conservative outlooks attitudinalists prescribe to judges.

How likely is *Daubert* to affect judicial decision-making, given what we know about judicial decision-making? From a greatly truncated description of a vast literature, let me draw the following three observations. First, institutional context matters. An appellate court judge, for example, will feel more pressure to adhere to precedent than a Supreme Court justice. Second, important constitutive precedents such as *Mosley*, or to borrow from Kritzer and Richards, “legal regimes,”<sup>93</sup> may have greater influence on lower court decisions when they are formalistic.<sup>94</sup> If precedents and prior interpretation do constitute the grounds for debate and decree the mode of analysis, it seems reasonable to assume that the grounds for debate—and thus the degree of autonomy for judges—will be broader under a balancing or a totality of the evidence analysis than under a more formal method, such as the three-part test found in *Brandenburg v. Ohio*.<sup>95</sup>

Third, textual or doctrinal ambiguity may be offset by shared visions of legal ideology or legal goals, goals distinct from (if often overlapping with) liberal or conservative policy agendas. In other words, law does not consist simply of doctrine and tests, but also a shared “state of mind” among legal practitioners.<sup>96</sup> To draw an example from constitutional law, the chance of a racially discriminatory law surviving strict scrutiny is low not only because of the difficulty in crafting a law that is sufficiently narrowly tailored to address a compelling interest, but also because of the shared understanding of post-Warren Court judges that such laws are generally illegitimate.<sup>97</sup> Likewise, interpretations of the 10<sup>th</sup> Amendment have depended greatly on competing understandings of whether the Court should demarcate and enforce the boundaries of federalism, or whether those boundaries should be set by voters.<sup>98</sup> Once rule-based

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<sup>93</sup> Richards & Kritzer, *supra* note 88, at 307 n.1.

<sup>94</sup> See Guthrie et al., *supra* note 12, at 40–43; ADRIAN VERMEULE, *JUDGING UNDER UNCERTAINTY: AN INSTITUTIONAL THEORY OF LEGAL INTERPRETATION* 4–5 (Harvard University Press 2006).

<sup>95</sup> *Brandenburg v. Ohio*, 395 U.S. 444, 447–48 (1969).

<sup>96</sup> Howard Gillman, *What's Law Got to Do With It? Judicial Behavioralists Test the "Legal Model" of Judicial Decision Making*, 26 *LAW & SOC. INQUIRY* 465, 486 (2001).

<sup>97</sup> See, e.g., *Hunter v. Underwood*, 471 U.S. 222, 228–33 (1985) (striking down a voting exclusion statute with a discriminatory motivation).

<sup>98</sup> See, e.g., *Printz v. United States*, 521 U.S. 898, 920–35 (1997) (holding that the federal government may not commandeer the states into administering or

federalism or political federalism gained currency among a majority of the Court, that philosophy animated future doctrine, further clarifying what the Court expects from lower courts. A legal regime that creates such a shared understanding should constrain or guide judicial decision-making more than a precedent whose meaning is contested, or worse, unclear, regardless of the rule, test, or analysis involved.

### *B. The Institutional Context of Daubert Decisions*

How do these considerations apply to admissibility decisions under the *Daubert* regime? As far as institutional context goes, federal trial court judges making admissibility decisions operate largely free from the fear of reversal. If *Daubert* decisions do reach an appellate court, the legal standard for appellate review is whether the judge's decision was an "abuse of discretion," a deferential rule.<sup>99</sup> The appellate judge clearly has some wiggle room in deciding what constitutes such an abuse, but the Supreme Court has made it clear in *Joiner* that it expects significant deference from its appellate courts.<sup>100</sup> Moreover, admissibility decisions may lack the salience that would lead to active policing of *Daubert* decisions by busy circuit judges, especially given that appellate judges may correctly determine that trial judges are "closer to the facts" than they are. One recent study of *Daubert* decisions in federal torts supports this theory, finding no evidence that judges act strategically to avoid being overturned by appellate courts.<sup>101</sup>

A quick tabulation of the affirmance rate of federal trial-level evidentiary decisions also supports this hypothesis. Between 2002 and 2005, for example, the affirmance rate of appellate courts for *Daubert* decisions at the trial level sat at just under ninety percent.<sup>102</sup> Of course, this high affirmance rate does not

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enforcing federal statutes); *Garcia v. San Antonio Metro. Transit Auth.*, 469 U.S. 528, 554 (1985) (holding that the state transit authority was not immune from minimum wage and overtime requirements of the Fair Labor Standards Act); Cornell W. Clayton & J. Mitchell Pickerill, *Guess What Happened on the Way to Revolution? Precursors to the Supreme Court's Federalism Revolution*, 34 *PUBLIUS* 85, 85–89 (2004).

<sup>99</sup> *Gen. Elec. Co.*, 522 U.S. at 139–47.

<sup>100</sup> *See id.* at 142–43.

<sup>101</sup> Buchman, *supra* note 7, at 688.

<sup>102</sup> Peter J. Neufeld, *Temporal Trends (?) in Appellate Review of Daubert Decisions*, BLOG 702, Feb. 6, 2005, <http://www.daubertontheweb.com/2005/02/temporal-trends-in-appellate-review-of.html>. There is a slight chance—as

count the numerous decisions that are never appealed. While judges may not be aware of this exact rate, they are surely aware of the magnitude of its effect, making them secure that their admissibility determination is unlikely to be successfully challenged. In short, the institutional context for admissibility decisions is one of considerable autonomy. Judicial autonomy, in turn, permits wide variation among judges in interpreting and implementing *Daubert* in different contexts.

### *C. Daubert's Fractured Stance on Admissibility*

#### 1. Admissibility in the *Daubert* Opinion

How does *Daubert* fare in providing doctrinal guidance for trial judges? Here again, the nature of the *Daubert* regime increases the probability of fragmentation, for as doctrine, *Daubert* is severely underdetermined. The decision not only eschews formalism; it explicitly denies that its gate-keeping responsibility can be formulated in any sort of rule-like language. Such avoidance seems reasonable from a philosophic standpoint, as asking a legal test to duplicate the “scientific method” when there is little agreement on exactly what that entails is a doomed enterprise. Nevertheless, as empty doctrine, *Daubert* essentially makes each judge the master of his own fiefdom, absent on-point precedent from the relevant circuit. The lack of doctrinal clarity should also decrease the chance of reversal (again absent on-point precedent), as finding an abuse of discretion may be more difficult to justify when the standards are hopelessly vague.

*Daubert* observers might contend that Blackmun’s dicta—the “considerations” of testing, peer-review, error rate, and general acceptance—serve as a rough formal test that mitigates these effects. A harried judge might simply ask whether the expert’s testimony is testable, is peer-reviewed, presents an error rate, is generally accepted, and be done. Two objections prevent this claim from gaining traction. First, while use of the *Daubert* dicta remains more common than the use of other indicia of arguments about reliability, they appear in less than half of all such

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Neufeld concedes—that his study may omit those few appellate decisions whose opinion lacked the term “*Daubert*.” However, even if these omissions raise the possibility of selection bias, slanting the win rate in a particular direction, Neufeld argues that as probable trite affirmations, their inclusion would increase, not decrease, the win rate.

admissibility decisions.<sup>103</sup>

Frequency of use aside, even if one treats the dicta as doctrine, the *Daubert* opinion provides little aid to their interpretation. Judges may not even understand concepts such as falsifiability,<sup>104</sup> especially if comprehension requires not only adequately defining the term but understanding the philosophic debates regarding its application.<sup>105</sup> The difference between one reasonable interpretation and another might mean the difference in admitting or excluding the evidence before the court. For example, do testing and falsification require that the expert's opinion have been actually tested? That it is capable of being tested? Or does a history of prior admission in a federal court serve as "adversarial testing" that satisfies the criterion?<sup>106</sup> Similarly, does peer review require publication within "an unbiased and financially disinterested community of practitioners?"<sup>107</sup> Or may peer review literally require only that expert opinions be reviewed by one's physical peer, as has been the case for some fingerprint technicians?<sup>108</sup>

Moving to error rates, does the error rate prong require a formal probability, as with DNA cases?<sup>109</sup> Or can it be satisfied by the expert's (laughable) claim that the error rate of a

<sup>103</sup> See Christina L. Studebaker & Jane Goodman-Delahunty, *Expert Testimony in the Courts: The Influence of the Daubert, Joiner, and Kumho Decisions*, 8 PSYCHOL. PUB. POL'Y & L. 251, 228 (2002).

<sup>104</sup> See Montz, *supra* note 28, at 107–15. Montz discusses a survey of a number of Texas state judges, finding their understanding of falsification, for example, was limited at best. D. H. Kaye, *On "Falsification" and "Falsifiability": The First Daubert Factor and the Philosophy of Science*, 45 JURIMETRICS J. 473, 475–81 (2005). It is possible that federal judges have a better understanding of such terms than their state counterparts.

<sup>105</sup> See Haack, *supra* note 19, at S66–68; Edmond & Mercer, *supra* note 27, at 93–95; David Ozonoff, *Epistemology in the Courtroom: A Little "Knowledge" Is a Dangerous Thing*, 95 AM. J. PUB. HEALTH S13, S13–14 (2005).

<sup>106</sup> See, e.g., *United States v. Havvard*, 117 F. Supp. 2d 848, 854 (S.D. Ind. 2000) (holding that latent finger print identifications are considered reliable evidence under the *Daubert* test).

<sup>107</sup> See, e.g., *United States v. Brewer*, No. 01 CR 892, 2002 U.S. Dist. LEXIS 6689, at \*24 (N.D. Ill. Apr. 12, 2002) (holding that the government failed to show the reliability of the handwriting comparison testimony under the *Daubert* test).

<sup>108</sup> See, e.g., *Havvard*, 117 F. Supp. 2d at 854 (discussing the application of *Daubert* to latent fingerprint identification).

<sup>109</sup> See, e.g., *United States v. Ewell*, 252 F. Supp. 2d 104, 113–14 (D.N.J. 2003) (holding that PCR/STR technology used for DNA identification has been subjected to peer review and has been generally accepted in satisfaction of *Daubert*).

particular technique is zero?<sup>110</sup> Finally, must general acceptance analysis extend beyond the agreement of a small expert community whose financial and employment interests are bound up in a technique's acceptance?<sup>111</sup> Or is general acceptance intended to examine what technique that particular community supports?<sup>112</sup> Judges may offer significantly different interpretations of these dicta, with little guidance from the *Daubert* decision or the Supreme Court as to which interpretations are more appropriate. Such differences make it unlikely that use of the dicta as a rough and ready doctrinal test could elucidate an analysis the Court has chosen to make opaque.

*Daubert's* vacuous doctrine could still be limited by signals from the Supreme Court that it desired a general position on the admission of experts, whether liberal or restrictive. Blackmun's recently released papers suggest the Court did intend to use *Daubert* to clarify the proper stance on admissibility.<sup>113</sup> Despite such intent, his opinion raises more questions than it answers. *Daubert* supports both a liberal and a restrictive judicial stance on admissibility, depending on what parts of the opinion one cites. In his attempts to mollify both the vociferous critics of "junk science,"<sup>114</sup> as well as those who worried that a reliability standard would "sanction a stifling and repressive scientific orthodoxy,"<sup>115</sup> Blackmun equivocated on whether the *Daubert* standard was a liberal or a more restrictive one.

Support for a liberal standard, for example, can be found in Blackmun's assurance that removing the Ninth Circuit's "general acceptance" and peer-review requirements as the formal

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<sup>110</sup> See, e.g., *United States v. Plaza*, 179 F. Supp. 2d 492, 515–16 (E.D. Pa. 2002) (holding that expert fingerprint testimony would be allowed, but not expert testimony that a particular latent print matches); *Havvard*, 117 F. Supp. 2d at 854–55 (holding that despite the absence of a single quantifiable standard for measuring the sufficiency of any latent print for purposes of identification, latent print identification easily satisfies the standards of reliability in *Daubert* and *Kumho*). Note that in *Plaza I*, Judge Pollack rejected the expert's claim, though he would later reconsider his motion to limit fingerprint expert testimony because he came to believe that the FBI, at least, had sufficiently reliable procedures. *United States v. Plaza*, 188 F. Supp. 2d 549, 566, 571, 576 (E.D. Pa. 2002).

<sup>111</sup> Cole, *supra* note 8, at 1216.

<sup>112</sup> *Id.* at 1246; Epstein, *supra* note 8, at 646.

<sup>113</sup> E-mail from Michael Saks, Professor of Law, University of Iowa College of Law, to Robert Robinson, Assistant Professor of Political Science, University of Alabama-Birmingham (July 1, 2007, 10:25 PM) (on file with author).

<sup>114</sup> Huber, *supra* note 19, at 2–6.

<sup>115</sup> *Daubert*, 509 U.S. at 596.

standard of admissibility would not lead to “a ‘free-for-all’ in which befuddled juries are confounded by absurd and irrational pseudoscientific assertions.”<sup>116</sup> Blackmun instead counseled that the traditional tools of the adversarial system, such as cross-examination and jury instructions, would suffice to supplement *Daubert* analysis.<sup>117</sup> Blackmun’s support for the jury system and traditional legal safeguards against unreliable evidence, as well as his position that a liberal standard of admissibility was most consistent with the spirit of the Federal Rules of Evidence, convinced some legal scholars that *Daubert* ultimately took a “liberal” stance on admissibility.<sup>118</sup> Similarly, in executing their gate-keeping responsibilities in the years immediately following *Daubert*, several district courts specifically noted the “liberal” nature of the Federal Rules and the *Daubert* decision in making their decision.<sup>119</sup>

However, Blackmun’s opinion also supports a more conservative or restrictive interpretation of the gate-keeping responsibility. Unlike scientific arguments, legal disputes must be resolved “finally and quickly,” Blackmun says, and hypotheses that are “probably wrong” will be “of little use” to courts.<sup>120</sup> Moreover, Blackmun accepted Merrell Dow’s position that the word “science” in Rule 702 obligates judges to apply some reliability analysis, one presumably based on traditional realist criteria.<sup>121</sup> Given this apparent elevation of judges to gate-keepers of reliability—a view itself strengthened by Rehnquist’s

<sup>116</sup> *Id.* at 595–96.

<sup>117</sup> *Id.* at 596.

<sup>118</sup> See Brian Stuart Koukoutchos, *Solomon Meets Galileo (And Isn't Quite Sure What to Do With Him)*, 15 CARDOZO L. REV. 2237, 2246 (1994); see also Anthony Z. Roisman, *Conflict Resolution in the Courts: The Role of Science*, 15 CARDOZO L. REV. 1945, 1951 (1994) (“A categorical refusal even to examine and consider scientific evidence ... is a recipe for error in any forum.”).

<sup>119</sup> See, e.g., *Mitchell v. Gencorp, Inc.*, 968 F. Supp. 592, 594 (D. Kan. 1997); *Higgins v. Diversey Corp.*, 998 F. Supp. 598, 601 n.6 (D. Md. 1997); *Pick v. Am. Med. Sys., Inc.*, 958 F. Supp. 1151, 1155, 1162 (E.D. La. 1997).

<sup>120</sup> *Daubert*, 509 U.S. at 597. While Blackmun is correct that legal and scientific practice differ in their methods for ascertaining truth, he greatly over-idealizes scientific practice in this statement. Funding, tenure, and scholarly competition, for example, put rather discrete time limits on scientific exploration in the short-term, just as path dependency, cultural paradigms, and scientific organizations do so in the long run. See, e.g., Caudill & Redding, *supra* note 19, at 729, 744–45; Jasanoff, *supra* note 24, at 347, 349, 358; BRUNO LATOUR & STEVE WOOLGAR, *LABORATORY LIFE: THE SOCIAL CONSTRUCTION OF SCIENTIFIC FACTS* 27, 31–32, 36–37 (Sage Publications 1979); PETER L GALISON, *HOW EXPERIMENTS END* 277 (University of Chicago Press 1987).

<sup>121</sup> *Daubert*, 509 U.S. at 589–91.

explicit concern over the same—other legal scholars viewed *Daubert* as establishing a more conservative stance than had been true before it.<sup>122</sup> Such authors either celebrated that federal courts would now take a harder look at “junk” testimony plaguing civil and criminal cases<sup>123</sup> or worried that this stance would raise the costs of bringing a case to trial, aiding corporate defendants more than anything else.<sup>124</sup> Support for a more restrictive position on admissibility can also be found in the second and third cases of the “*Daubert* trio:” *G.E. v. Joiner* and *Kumho Tire v. Carmichael*.<sup>125</sup> While *Joiner* and *Kumho* are better known for their clarifications of *Daubert* standards than their factual situations, the Court’s own application of its standards to the cases before them better fit a conservative stance than a liberal one.<sup>126</sup>

The split regarding *Daubert*’s position on admissibility has, after almost fifteen years, given way to more nuanced arguments about *Daubert*’s admissibility standards being liberal or conservative in particular contexts. For example, one emerging scholarly consensus views federal courts as taking a relatively liberal position in criminal cases (particularly where the state’s evidence is concerned) while being much more restrictive in civil

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<sup>122</sup> George Lakoff, *A Cognitive Scientist Looks At Daubert*, July 29, 2005, <http://www.rockridgeinstitute.org/research/lakoff/daubert/>.

<sup>123</sup> David E. Bernstein, *The Admissibility of Scientific Evidence After Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 15 CARDOZO L. REV. 2139, 2139 (1994); see also Randolph Jonakait, *The Meaning of Daubert and What That Means for Forensic Science*, 15 CARDOZO L. REV. 2103, 2110 (1994) (stating that trial courts must now determine whether “scientific testimony is indeed scientific”).

<sup>124</sup> Roisman, *supra* note 118, at 1951.

<sup>125</sup> *Gen. Elec. Co.*, 522 U.S. at 136; *Kumho Tire Co.*, 526 U.S. at 153 (finding that despite an expert’s qualifications, his methodology was unreliable, and thus the Court concurred with the District Court’s exclusion of his testimony); Berger, *supra* note 67, at 38.

<sup>126</sup> Rehnquist’s opinion in *Joiner* required that each piece of the plaintiff’s expert testimony be reliable in its own right, rather than reliable as a whole. See generally *Joiner*, 522 U.S. at 142–47 (agreeing with the District Court “that the studies upon which the experts relied were not sufficient . . . to support their conclusions . . .”). Breyer’s opinion in *Kumho* found the plaintiff’s expert to be qualified, and his method of visually inspecting tires to look for defects a reasonable one, but rejects his argument that because no other causes for the blowout could be found, a manufacturing defect must have been the cause. *Kumho*, 526 U.S. at 153–58. These two types of arguments—requiring that each piece of evidence be adequate evidence of causation on its own, and requiring that an expert “rule in” a factor as a cause by substantive evidence rather than simply “ruling out” other potential causes—have frequently been used to exclude plaintiff expert testimony under *Daubert*. See generally *Grimes v. Hoffmann-LaRoche, Inc.*, 907 F. Supp. 33, 37–38 (D.N.H. 1995).

cases.<sup>127</sup> Another possibility is that federal courts “grandfathered” previously admitted expert testimony by providing it with a liberal standard, while requiring genuinely new expert testimony to meet a more restrictive standard.<sup>128</sup> In any case, the possibility of *Daubert* creating a globally shared understanding of admissibility seems remote. As with institutional context, the Supreme Court’s own doctrinal ambiguity, as well as division among influential commentators, contributes to fragmentation and the local construction of reliability.

## 2. Contrasting Admissibility Standards in *United States v. Crisp*

As an example of the degree to which divergent positions on expert admissibility may be taken from *Daubert*, I will turn to *United States v. Crisp*, a Fourth Circuit appeal challenging the admission of the government’s fingerprint and handwriting comparison experts.<sup>129</sup> Crisp had been convicted of bank robbery, largely on the strength of accomplice testimony, latent prints drawn from palm prints, and handwriting comparisons of a note Crisp allegedly wrote to another accomplice.<sup>130</sup> The fingerprint and handwriting expertise was central to the verdict. As the majority concedes, “[t]he credibility of both Mitchell and Torain [the co-conspirators] was substantially impeached,” and the government itself conceded that the expert testimony “was necessary to prove Crisp’s guilt beyond a reasonable doubt.”<sup>131</sup>

Chief Judge Wilkins joined Judge King in affirming the district court’s decision to admit the government’s experts, while Judge Michael dissented.<sup>132</sup> More striking than the split decision, however, was the manner in which each opinion envisioned the *Daubert* gate-keeping responsibility. King began by citing some recent precedent in which fingerprint expertise had been admitted under *Daubert*, as well as placing significant importance on the fact that fingerprint evidence had been admissible for decades.<sup>133</sup> Moving to the *Daubert* dicta, King

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<sup>127</sup> See Berger, *supra* note 7, at S63–64; see also Studebaker, *supra* note 7, at 256, 263, 300–01; Giannelli, *supra* note 8, at 1073; Neufeld, *supra* note 8, at S109.

<sup>128</sup> Cole, *supra* note 8, at 1272.

<sup>129</sup> *United States v. Crisp*, 324 F.3d 261, 265 (4th Cir. 2003).

<sup>130</sup> *Id.* at 263–65.

<sup>131</sup> *Id.* at 264 n.1, 282.

<sup>132</sup> *Id.* at 263.

<sup>133</sup> *Id.* at 266.

applied these criteria to the state's evidence in an extremely deferential fashion.<sup>134</sup> Referencing a similar opinion in *United States v. Havvard*,<sup>135</sup> the majority argued that despite its lack of empirical testing, fingerprint evidence and handwriting evidence had been sufficiently "tested in the adversarial system."<sup>136</sup> In other words, if there were methodological problems with such evidence, or if their premises were false, surely several decades worth of cases would have caught them.

King then glided over the peer review requirement, only citing *Havvard's* statement that an individual technician's work was "reviewed" by one of his peers.<sup>137</sup> When addressing the error rate requirement, King's opinion simply accepted at face value the risible claim by the government that fingerprinting has an error rate of zero.<sup>138</sup> Given that even DNA identification presents non-zero error rates, no judge should accept such a claim.<sup>139</sup> Finally, addressing the general acceptance prong, the majority noted that, "[w]hile the principles underlying fingerprint identification have not attained the status of scientific law, they nonetheless bear the imprimatur of a strong general acceptance, not only in the expert community, but in the courts as well."<sup>140</sup> Expert communities whose interests and incentives depend entirely on the acceptance of a particular technique do not provide a good measure of its reliability or validity. Worse, the position that general acceptance can rest on acceptance *by courts* in effect "grandfathers" certain techniques, exempting them from actual gate-keeping.<sup>141</sup>

The most arresting fact about the majority opinion, however, is its assumption that the defendant was required to demonstrate

<sup>134</sup> *Id.* at 265–70.

<sup>135</sup> *United States v. Havvard*, 260 F.3d 597, 600–01 (7th Cir. 2001).

<sup>136</sup> *Crisp*, 324 F.3d at 266; *Havvard*, 260 F.3d at 601.

<sup>137</sup> *Crisp*, 324 F.3d at 266, 269, 270–71.

<sup>138</sup> *Id.* at 269.

<sup>139</sup> *Id.* at 278. One response to this claim is that while the technique itself produces no errors, individual examiners may, of course, err. However, since the abandonment of the "points" system and the movement towards the more subjective ACE-V technique pioneered by Ashbaugh, the examiner essentially *is* the technique. DAVID R. ASHBAUGH, QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY 196–97 (CRC Press 1999). Much like a harbor pilot, one cannot readily separate the examiner from the technique. The same is true for handwriting expertise, where even the majority opinion in *Crisp* implicitly concedes that there is no uniform method or set of standards.

<sup>140</sup> *Crisp*, 324 F.3d at 268.

<sup>141</sup> *Cole*, *supra* note 8, at 1244–45, 1274.

the prosecution's experts were *not* reliable, rather than the converse. Confronted with the accusation that the foundations and methods of fingerprint comparison lack adequate empirical testing, Judge King responded that "Crisp cites no studies demonstrating the unreliability of fingerprinting analysis . . ." <sup>142</sup> Wrapping up the Court's discussion of the *Daubert* dicta, King wrote that, "[w]hile Crisp may be correct that further research, more searching scholarly review, and the development of even more consistent professional standards is desirable, he has offered us no reason to reject outright a form of evidence that has so ably withstood the test of time."<sup>143</sup> King then framed *Daubert* as a liberal standard, citing Blackmun's dictum that "[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence."<sup>144</sup>

Why is this opinion so deferential? King showed his hand when he accused that "Crisp today advocates the wholesale exclusion of a long-accepted form of expert evidence. Such a drastic step is not required of us under *Daubert*, however, and we decline to take it."<sup>145</sup> Later, he similarly wrote that "to postpone present in-court utilization of this 'bedrock forensic identifier' pending such research would be to make the best the enemy of the good."<sup>146</sup> King clearly feared the institutional consequences of excluding forensic evidence regularly utilized by the state; the degree to which this fear influenced his decision is, of course, unknown.

By contrast, the dissent put teeth into the *Daubert* dicta and found the governments' expertise wanting. Judge Michael argued that viewing the test prong as adversarial testing, or the view of general acceptance as acceptance in court misconstrues the judiciary's gate-keeping responsibilities: "[o]ur adversarial system has much to commend it, but it is not a general substitute for the specific *Daubert* inquiry."<sup>147</sup> If, on the other hand, testing

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<sup>142</sup> *Crisp*, 324 F.3d at 267.

<sup>143</sup> *Id.* at 269.

<sup>144</sup> *Id.* at 269–70 (quoting *Daubert*, 509 U.S. at 596).

<sup>145</sup> *Crisp*, 324 F.3d at 268.

<sup>146</sup> *Id.* at 270 (quoting *Llera Plaza*, 188 F. Supp. 2d at 572).

<sup>147</sup> *Crisp*, 324 F.3d at 273 (Michael, J., dissenting). Michael notes that at its inception, fingerprint testimony was admitted largely without challenge, allowing it to build a reputation of reliability that no lawyer—particularly no lawyer representing an indigent like Crisp—would directly challenge (or even

requires actual empirical testing, peer review requires publication in peer-reviewed journals, and general acceptance requires acceptance beyond an expert community whose livelihood would be threatened by exclusion, Michael said, the prosecution's experts fail on all counts.<sup>148</sup> The foundations of these two techniques—such as the probability that a latent print might match more than one full set of exemplars, or whether one's handwriting is fixed, unique, and capable of individuation—have not been tested, nor have their propositions been put forward for review in scientific (rather than trade) journals. Some semblance of an error rate might be found in the discussion of proficiency tests, Michael noted, but the particular tests cited either lacked external validity (i.e., they were too easy), or only marginally established expert proficiency.<sup>149</sup> Concluding that the government had failed to satisfy *Daubert*, Michael voted to exclude both sets of testimony. “The government has had ten years to comply with *Daubert*. It should not be given a pass in this case.”<sup>150</sup>

It would be tempting to conclude that the dissent has applied the “true” meaning of *Daubert* and the majority has misread it; tempting, but mistaken. The majority is certainly correct on one count: its approach to *Daubert* squares with the manner in which most federal courts have treated most attacks on the government's experts in criminal cases.<sup>151</sup> How could the majority federal decisions overwhelmingly advance the “wrong” interpretation of *Daubert* and suffer no consequences? While I would argue the majority's interpretation of terms such as “testing” and “general acceptance” is laughably weak, King's insistence that the *Daubert* court did not intend a radical restructuring of expert testimony in criminal cases may be correct. In any case, the point is not that one side or another applied the “correct” interpretation of *Daubert*, but instead that

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know to challenge). SIMON A. COLE, *SUSPECT IDENTITIES: A HISTORY OF FINGERPRINTING AND CRIMINAL IDENTIFICATION* 280 (Harvard University Press 2001) (explaining how in more than forty criminal cases fingerprint evidence went unchallenged despite significant discrepancies).

<sup>148</sup> *Crisp*, 324 F.3d at 274–76 (Michael, J. dissenting).

<sup>149</sup> *Id.* at 273–75. See Saks, *supra* note 35, at 1073–77; D. Michael Risinger et al., *The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 CAL. L. REV. 1, 32–33 (2002) (arguing that forensic proficiency tests are too easy).

<sup>150</sup> *Crisp*, 324 F.3d at 272.

<sup>151</sup> See Neufeld, *supra* note 8, at 109; Risinger, *supra* note 8, at 99.

*Daubert* has no correct interpretation. Rather than create a clear and consistent stance on the standard by which trial courts should admit expert testimony, the *Daubert* regime allows individual courts or circuits to develop localized understandings of admissibility.

#### *D. Daubert's Fractured Stance on Epistemology*

A final factor that might unify *Daubert's* admissibility regime is the Supreme Court's stance on what constitutes good science. As with its doctrine and position on admissibility, however, *Daubert's* stance on epistemology can justify multiple interpretations. In one scholar's terms, *Daubert* encourages a "pragmatic constructivism" about epistemological issues, sidestepping direct consideration of epistemology and inviting lower courts to do the same.<sup>152</sup> Even were one to read into *Daubert* a particular philosophy of science, however, I argue here that epistemology is likely to fade before other, more salient judicial goals. Unlike Gillman's depiction of early 20<sup>th</sup> century federal judges, many of whom were sincerely convinced that the well-being of the Republic depended on constraining the use of the police power to the public good,<sup>153</sup> it is hard to see judges spending a great deal of capital or placing particular emphasis on championing a particular epistemology.

As argued in Section II, *Daubert* does not rest on a single point along the realist-constructivist continuum. The language of the *Daubert* opinion gives judges considerable freedom to employ either realist or constructivist factors as they see fit. Why would the Court endorse such ambiguity, given that its apparent goal was to resolve circuit conflict over the appropriate standard? First, frankly put, engaging the philosophy of science is a difficult task not only because it is complex, but because there is no consensus position on what constitutes good science. When constructivists criticize courts for naively relying on realist indicia of reliability, they contend there is no toolbox of methods that will readily allow judges to demarcate the wheat from the chaff.<sup>154</sup> In their view, deference to realist criteria not only

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<sup>152</sup> Caudill & Redding, *supra* note 19, at 756.

<sup>153</sup> GILLMAN, *supra* note 92, at 147–48.

<sup>154</sup> See, e.g., Farrell, *supra* note 22, at 2199–2207; Sheila Jasanoff, *What Judges Should Know About the Sociology of Science*, 32 JURIMETRICS J. 345, 358–59 (1992); Shana M. Solomon & Edward J. Hackett, *Setting Boundaries Between Science and Law: Lessons From Daubert v. Merrell Dow*

creates an unrealistic and unattainable vision of scientific certainty, but also leads courts to miss their own part in its social construction.

In due turn, however, such critics overlook that the conclusions one might draw from their own work are equally varied and conflicting.<sup>155</sup> How would a generalist judge, unlikely to have any training in epistemology or the sociology of science, discriminate between the views of Bruno Latour, Peter Feyerbrand, Peter Galison, and Thomas Kuhn in appropriating the “right” lessons from the sociology of science?<sup>156</sup> Asking judges to take a “constructivist” stance towards science is itself a request with little internal consistency. If anything, such constructivist arguments are likely to serve as tools for pragmatic judges wishing to attack specific realist claims in particular situations.<sup>157</sup> The judicial capacity for evaluating and discriminating higher-order epistemological arguments is arguably no greater than the judicial capacity for evaluating high-level scientific disputes. It is difficult to blame the Supreme Court for not jumping headfirst into such murky debates.

Second, even were a judge to take a relatively principled “realist” or “constructivist” stance on scientific epistemology from *Daubert*, choosing their favorite philosophers of science to emulate, such a stance might not correlate with any expected position on the admissibility of expert testimony. Constructivist and realist positions may justify *either* a liberal *or* a restrictive approach to the admission of expert testimony. Ultimately, the decision to admit challenged expert testimony is a decision about which party should bear the burden of uncertainty and risk.<sup>158</sup> For example, a judge inclined towards a constructivist view of

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Pharmaceuticals, Inc., 21 SCI. TECH. & HUM. VALUES 131, 131–32 (1996).

<sup>155</sup> See Caudill & Redding, *supra* note 19, at 743–44.

<sup>156</sup> FEYERABEND, *supra* note 21, at 165–67; BRUNO LATOUR & STEVE WOOLGAR, LABORATORY LIFE: THE SOCIAL CONSTRUCTION OF SCIENTIFIC FACTS 17–18 (Sage 1979); GALISON, *supra* note 120, at 258; 2 THOMAS S. KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS 1–3 (2d ed. University of Chicago Press 1970).

<sup>157</sup> Edmond and Mercer, who surveyed judges’ use of various important philosophers of science, found, unsurprisingly, that such use demonstrated little understanding of that field’s development over the last few decades. See Edmond & Mercer, *supra* note 27, at 97–100. Specifically, the authors track the heavy influence of Karl Popper, whose work is largely responsible for the falsification prong of the *Daubert* “test,” but whose importance in the actual philosophy of science has faded. By contrast, recent leading lights of the field were ignored. The authors conclude that the sociology of science has at best failed to permeate the law, and at worst has been misappropriated. *Id.*

<sup>158</sup> JASANOFF, *supra* note 23, at 44.

science might agree that there are multiple valid scientific positions on contested issues, rather than right and wrong answers. As such, she may be reluctant to exclude expert testimony. However, this heightened sense of scientific uncertainty might just as well lead a different constructivist-minded judge to become less liberal in his admissibility stance, as greater uncertainty justifies the admission of only extremely well-settled opinions. The decision of how one views science does not in itself answer the question of who should bear the risk of scientific uncertainty.

Third and most importantly, even if judges recognized, understood, and purported to adopt a particular epistemology of science, its impact on judicial decisions would still be limited. Current research on judicial behavior suggests that judges work to advance a variety of goals,<sup>159</sup> such as enacting their ideological policy preferences,<sup>160</sup> engaging in strategic maneuvering to reach those policy preferences,<sup>161</sup> advancing specific legal ideologies,<sup>162</sup> navigating specific institutional concerns,<sup>163</sup> and following precedent.<sup>164</sup> Though scholars hotly debate the relative importance of these factors,<sup>165</sup> it seems safe to say that maintaining a consistent epistemological theory would sit at the low end. I do not mean to argue that judges do not care about the quality of expert testimony or its impact on the trials in their courtroom; I simply imply that they will do so on a case by case basis, rather than working from a grand theory. Whether this occurs because judges are unaware of the theoretical basis for their decisions, because they deliberately avoid epistemological debates, or because they rationalize the use of a particular epistemology to achieve particular goals, pragmatism is the result.

Given these considerations, I see little chance for the

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<sup>159</sup> LAWRENCE BAUM, *THE PUZZLE OF JUDICIAL BEHAVIOR* 15–16 (University of Michigan Press 1997).

<sup>160</sup> See SEGAL & SPAETH, *supra* note 82, at 65.

<sup>161</sup> See EPSTEIN & KNIGHT, *supra* note 87, at 11–12.

<sup>162</sup> See GILLMAN, *supra* note 92, at 1.

<sup>163</sup> See *THE SUPREME COURT IN AMERICAN POLITICS: NEW INSTITUTIONALIST INTERPRETATIONS* 2 (Howard Gillman & Cornell Clayton eds., University Press of Kansas 1999).

<sup>164</sup> See Richards & Kritzer, *supra* note 91, at 827–28; THOMAS G. HANSFORD & JAMES F. SPRIGGS II, *THE POLITICS OF PRECEDENT ON THE U.S. SUPREME COURT* 5 (Princeton University Press 2006).

<sup>165</sup> *THE PIONEERS OF JUDICIAL BEHAVIOR* 90 (Nancy Maveety ed., University of Michigan Press 2003).

emergence of a consistent epistemological understanding of *Daubert*. Different areas of testimony will raise different arguments, bring forth different types of litigants, activate different sorts of judicial goals, and lead judges to be more receptive to specific realist or constructivist claims. Judges may rely on both realist indicators and constructivist concerns, depending upon the judicial goals in question and the type of expertise before them. Local constructions of reliability may indeed create shared understandings about how *Daubert* should be carried out, in spheres as disparate as civil suits involving the drug Paradol, discussion over the validity of hedonic damages, or the reliability of handwriting expertise. However, such understandings will be constructed by judges *sui generis*. Lacking clear doctrine, a clear stance on admissibility, and a clear stance on epistemology, *Daubert* should allow judges to construct the reliability of particular types of evidence in accordance with a number of different variables, leading to what are in effect different admissibility standards for different types of evidence. This relative autonomy is further enhanced by the institutional context of *Daubert* decisions, where even when they occur, successful appeals are unlikely. As a result, we lack a universal conception of reliability, instead having local ones.

#### IV. EMPIRICALLY MODELING *DAUBERT* DECISIONS

##### *A. Judges as Goal-Oriented Actors*

If doctrinal analysis cannot predict admissibility decisions, must we simply compile these different constructions of reliability and eschew general theorizing? Perhaps. However, a more fruitful option would model *Daubert* decisions using the insights of the judicial behavior literature. That the application of *Daubert* itself cannot explain the variation among admissibility cases does not mean that the variation cannot be explained. *Daubert* analysis must join the manifold areas of law to which empirical study has been applied if we are to understand what drives the construction of reliability.

In this section, I suggest variables for building such a model. I ground the model in the well-regarded theory that views judges as goal-oriented actors in a particular institutional context.<sup>166</sup> Judges are neither cogs in the mechanistic application of law nor

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<sup>166</sup> See BAUM, *supra* note 159, at 13–14.

unfettered policy-makers; like any political actor, they have goals that shape and are shaped by legal institutions (including the law). I suggest three categories of goals in admissibility decisions that might help identify relevant variables: (1) regulating the “reliability” of expert testimony, (2) maintaining institutional stability and autonomy, and (3) advancing one’s “policy preferences.” Beyond these three categories, I add the potential effect of on-point precedent, potential funding disparities among various classes of litigants, and specific circuit rules or practices that might shape admissibility decisions.

### *B. Legal Goals: Assessing Methodological Quality*

First, I argue judges care about the quality, validity, or reliability of the expert evidence before them. Some commentators state that the first goal of courts is justice, not truth, and that an overly restrictive standard for expert testimony would harm the courts’ ability to resolve social disputes fairly.<sup>167</sup> Oddly, this position dismisses the connection between finding truth and the perception of justice, that justice rests not only on fairness but also on the belief that “correct” decisions have been reached. Downplaying truth in legal decisions could have ugly consequences: punishing an unsympathetic corporation on “social fairness” grounds could lead to actual harm if its product, was, in fact, safe and helpful. It may be true, of course, that in particular cases the uncertainty regarding the accurate distribution of blame cannot be reduced, and we will be stuck, as Jasanoff has argued, deciding on fairness grounds who should assume the burden of risk.<sup>168</sup> Conceding this, I still assume most judges would agree that “getting it right” is an important part of their gate-keeping responsibilities, and that there will be some concern about the reliability and validity of the evidence before them.

In line with Section III, I argue that the realist indicia from the *Daubert* dicta are too fluid to serve as independent variables. As the *Crisp* case illustrates, there are no fixed meanings of terms such as falsifiability, peer-review, or general acceptance.<sup>169</sup> If a consensus on their meaning did arise within a particular circuit,

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<sup>167</sup> Farrell, *supra* note 22, at 2204–07.

<sup>168</sup> JASANOFF, *supra* note 23, at 114–15.

<sup>169</sup> *Crisp*, 324 F.3d at 266, 273–76 (“But [t]he *Daubert* court did not suggest that acceptance by a legal, rather than a scientific community, would suffice.” (quoting *Starzecpyzel*, 880 F. Supp. at 1038.

or on a particular issue, they might serve as reasonably reliable variables, but such a consensus does not exist on a global level. I aim here for a more parsimonious theory of judicial decision-making, and case-specific definitions of the dicta do not suffice. Moreover, as epistemological pragmatists, judges will not restrict their reliability analysis to the realist demarcations of good science found in *Daubert*, but may also consider “constructivist” insights—even if the judge is unlikely to understand them as such (or care about the difference). If the model is to include variables that measure judicial concern over reliability, something beyond the dicta must be included.

What factors might a judge utilize as general proxies for reliability? Without exhausting the possibilities, I suggest two variables here. First, faced with complex methodological disagreements, a judge might trust his instincts (or prejudices) and assume that particular classes of litigants are more likely to proffer expert testimony of dubious quality. This assumption fits with recent research suggesting that judges, like most people, often rely on intuition for their assessments rather than deliberation.<sup>170</sup> I assume that judges would be less likely to trust civil plaintiffs—whose experts they might see as nothing more than tools to advance the plaintiff’s chances of winning in the “big casino” of litigation—than civil defendants.<sup>171</sup> This view of civil plaintiffs has been advanced at least since the 1990s by polemicists such as Peter Huber, who launched a war on “junk science” in the civil court system.<sup>172</sup> Conversely, in criminal trials, judges might find defendants the more likely party to proffer unreliable expertise or baselessly attack experts proffered by the state, as their freedom depends on it.<sup>173</sup>

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<sup>170</sup> See Guthrie, *supra* note 12, at 2.

<sup>171</sup> See ROY GRUTMAN & BILL THOMAS, *LAWYERS AND THIEVES* 57 (Simon & Schuster 1990) (showing how the goal of a lawyer is to make his or her client a beneficiary); HUBER, *supra* note 19, at 42–43, 55–56 (discussing the change in judicial attitudes toward civil plaintiffs).

<sup>172</sup> HUBER, *supra* note 19, at 182–83.

<sup>173</sup> In other words, judges generally assume criminal defendants are guilty. See JAMES EISENSTEIN & HERBERT JACOB, *FELONY JUSTICE: AN ORGANIZATIONAL ANALYSIS OF CRIMINAL COURTS* 5–6 (Little, Brown & Company 1977) (describing how judges' opinions "vary" with "their attitudes toward crime and criminals"). That said, even if defense experts can be discounted because of their clients' desperation, government experts are also susceptible to pressures to help the police and the prosecution secure convictions. See M. J. Saks et al., *Context Effects in Forensic Science: A Review and Application of the Science of Science to Crime Laboratory Practice in the United States*, 43 *SCI. & JUST.* 77, 83–85 (2003).

Evidence that litigant identity impacts judicial decisions can be justified by more than just broad generalizations. Research by Clermont and Eisenberg, for example, demonstrates that federal appellate courts disparately favor civil defendants on appeal because they (inaccurately) view trial courts as biased for plaintiffs.<sup>174</sup> The nascent empirical literature on *Daubert* also suggests admissibility decisions privilege civil defendants and criminal prosecutors, although not for the same reasons. Civil cases are overwhelmingly levied by civil defendants against civil plaintiffs, with the latter losing the majority of these challenges.<sup>175</sup> In the criminal sphere, by contrast, defendant experts face the most challenges, even though prosecutors utilize the vast majority of experts.<sup>176</sup> Like their civil plaintiff counterparts, criminal defendants are also far, far more likely to lose their challenges to plaintiff experts as well as have their own experts excluded than the reverse.<sup>177</sup> Even accounting for the reasonable objection that such disparities rest on a studied consideration of the quality of the proffered expertise rather than a heuristic distrust of particular litigant classes, litigant identity may serve as a testable “constructivist” measure of reliability.

A second proxy for reliability might come from positive or negative signals by professional groups or academic organizations. General acceptance remains part of the *Daubert* regime, and such signals might anchor a judge’s considerations of whether an expert claim is sufficiently valid. Sociologists refer to attempts by academic or professional fields to demarcate the line between science and bad science or non-science as “boundary work.”<sup>178</sup> The absence of a particular psychological theory from the DSM-IV,<sup>179</sup> for example, or a negative appraisal about a theory of medical causation from the American Medical Society,

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<sup>174</sup> Kevin M. Clermont & Theodore Eisenberg, *Anti-Plaintiff Bias in the Federal Appellate Courts*, 84 JUDICATURE 128, 128–31 (2000) (suggesting that plaintiffs appeal more often and get fewer reversals than defendants).

<sup>175</sup> See Risinger, *supra* note 8, at 108, 110.

<sup>176</sup> Saks & Faigman, *supra* note 11, at 120–21.

<sup>177</sup> See Risinger, *supra* note 8, at 110.

<sup>178</sup> Thomas F. Gieryn, *Boundary-Work and the Demarcation of Science from Non-science: Strains and Interests in Professional Ideologies of Scientists*, 48 AM. SOC. REV. 781, 781 (1983); see also JASANOFF, *supra* note 23, at xiii-xvi (discussing the “difficulties faced by judges and juries in recognizing ‘good science’ and ‘legitimate expertise’ ... “and the inconsistent measures courts use to interpret and understand science).

<sup>179</sup> AMERICAN PSYCHIATRIC ASSOCIATION, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (4th ed., text rev. 2000).

might shape the way in which a judge evaluates a particular expert. To cite a particular example, a number of toxic tort plaintiffs have brought forward experts to claim that a company's product has led to them to suffer from Multiple Chemical Sensitivity (MCS), a syndrome which one commentator calls a "multi-symptomatic disorder affecting multiple organ systems resulting from exposure to a multitude of chemicals at levels tolerated by the majority of the population."<sup>180</sup> To the mainstream medical world, MCS is fatally lacking in objective diagnostic criteria injury.<sup>181</sup> Courts have been quick to cite major medical organizations when they lambast the adherents of MCS (usually called clinical ecologists) as promulgating unscientific theories, sometimes explicitly relying on such statements to exclude the plaintiff's experts.<sup>182</sup>

*C. Institutional Goals: Weighing the Effects of Admissibility  
Decisions on Courts*

While reliability may be the primary consideration in admissibility decisions, it is certainly not the only one. As "repeat players," judges should see their decisions as iterations in a larger process, rather than a series of unconnected outcomes.<sup>183</sup> Decisions which may impact the operation of court institutions, then, should garner special attention. The Supreme Court's recent decision in *Blakely v. Washington*, for example, which held the Sixth Amendment to require all facts introduced at sentencing to have been heard by a jury, was criticized by Justice O'Connor as much on institutional grounds as constitutional ones.<sup>184</sup> O'Connor worried that the decision would impose a "constitutional tax" on jurisdictions that wished to use facts at sentencing that had not been brought forward during the guilt phase, requiring them to employ costly bifurcated trials for crimes

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<sup>180</sup> Carl H. Johnson, *When Science is Too Daunting: Multiple Chemical Sensitivity, Federal Courts, and the Struggling Spirit of Daubert*, 11 VILL. ENVTL. L.J. 273, 276-78 (2000).

<sup>181</sup> See William J. Waddell, *The Science of Toxicology and its Relevance to MCS*, 18 REG. TOXICOLOGY & PHARMACOLOGY 13, 13 (1993).

<sup>182</sup> See, e.g., *Frank v. New York*, 972 F. Supp. 130, 133-34 (N.D.N.Y. 1997); *Treadwell v. Dow-United Tech.*, 970 F. Supp. 974, 981 (M.D. Ala. 1997); *Coffin v. Orkin Exterminating Co., Inc.*, 20 F. Supp. 2d 107, 111 n.5 (D. Me. 1998).

<sup>183</sup> Galanter, *supra* note 30, at 96-97, 122.

<sup>184</sup> *Blakely v. Washington*, 542 U.S. 296, 298, 305 (2004); *Id.* at 322-26 (O'Connor, J., dissenting).

short of murder.<sup>185</sup> Similarly, some constitutional concerns, such as standing or justiciability, are openly influenced by concerns over the courts' institutional capabilities.

In *Daubert* decisions, judges might consider how their decisions to admit or exclude certain types of expert testimony might harm the courts. Admitting certain types of plaintiff expert testimony in the civil sphere might signal other litigants to file similar suits, increasing caseload pressures or greatly complicating previously routine decisions. Conversely, excluding prosecutorial expert testimony might encourage criminal defendants to escalate their own use of *Daubert*. The *Crisp* majority, for example, argued against the "wholesale exclusion of a long-accepted form of expert evidence," a phrase that implies a fear of institutional consequences for granting the *Daubert* motion to exclude.<sup>186</sup> Other admissibility decisions have been more direct in their consideration of institutional impact.<sup>187</sup> In response to a *Daubert* motion to exclude fingerprint expertise on grounds similar to those made by *Crisp*, the judge worried that:

This Court is unpersuaded by such reasoning, for it hearkens to an imprudently stringent understanding of scientific objectivity. Indeed, such reasoning could function to render numerous categories of expert evidence, such as psychiatric or medical forensic evidence which rest in some part upon that individual's skill and experience in analyzing data, unreliable. *Daubert* and its progeny simply do not mandate such a conclusion.<sup>188</sup>

A similarly situated judge in *United States v. Hilerdiu Alteme* makes an even more direct reference to institutional concerns:

The difficulty with the argument advanced by the defenses is that it proves too much. If Dr. Story's criticism of the process of fingerprint examination were sufficient to preclude the testimony of other experts, large categories of scientific and technical testimony would be inadmissible. At a minimum, it would be necessary to eliminate the defense of insanity, since virtually all psychiatric opinions are subjective, in whole or in part.<sup>189</sup>

Note that the latter opinion essentially bases its application of *Daubert* upon the institutional consequences of exclusion, rather

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<sup>185</sup> *Id.* at 318–320 (O'Connor, J. dissenting).

<sup>186</sup> *Crisp*, 324 F.3d at 268.

<sup>187</sup> See, e.g., *United States v. Salim*, 189 F. Supp. 2d 93, 101 (S.D.N.Y. 2002); *United States v. Hilerdiu Alteme*, No. 99-8131-CR, at \*7–8 (S.D. Fla. Apr. 7, 2000), available at <http://onin.com/fp/altemedaubert.pdf>.

<sup>188</sup> *Salim*, 189 F. Supp. 2d at 101.

<sup>189</sup> *Hilerdiu Alteme*, No. 99-8131-CR, at \*7–8.

than addressing reliability per se. Given these examples, consideration of how the admissibility decision might impact caseload or bring new complexity to cases should be included in the behavioral model.<sup>190</sup>

Institutional variables should not be restricted to caseload. A more nuanced way in which categories of expert testimony might “threaten” courts is when particular expert theories challenge the empirical assumptions on which courts operate. For example, the act of witnessing—the presentation of evidence by laymen regarding things they have seen—has been a pillar of our trial system for centuries.<sup>191</sup> Unfortunately, psychologists who study the ways in which individuals process, store, and recall memories convincingly contend that eyewitness testimony is all too fallible.<sup>192</sup> The Innocence Project, famous for freeing wrongfully convicted defendants using DNA evidence, estimates on its website that mistaken eyewitness identification played at least a contributing role “in more than 75% of convictions overturned through DNA testing.”<sup>193</sup> Unsurprisingly, when the case against a criminal defendant is based wholly or in large part upon eyewitness testimony, some defendants have attempted to present expert testimony regarding these problems.<sup>194</sup>

<sup>190</sup> Such a variable is also needed to help tease out the true meaning of the litigant identity variable. For example, do civil plaintiffs and criminal defendants generally lose more from *Daubert* decisions because judges perceived their experts to be of lower quality than other litigants, or because deciding in their favor might substantially increase judicial workloads? Or, perhaps, do these variables interact?

<sup>191</sup> See, e.g., Andrew Elliot Carpenter, *Chambers v. Mississippi: The Hearsay Rule and Racial Evaluations of Credibility*, 8 WASH. & LEE RACE & ETHNIC ANCESTRY L.J. 15, 15 (2002); Catherine M. Polizzi, *A New View into the Truth: Impact of a Reliable Deception Detection Technology on the Legal System*, 21 RUTGERS COMPUTER & TECH. L.J. 395, 409 (1995); Sonja R. West, *The Story of Me: The Underprotection of Autobiographical Speech*, 84 WASH. U. L. REV. 905, 947 (2006).

<sup>192</sup> See CUTLER & PENROD, *supra* note 28, at 7, 13–14; LOFTUS, *supra* note 28, at 6–7.

<sup>193</sup> The Innocence Project, *Understand the Causes: Eyewitness Misidentification*, <http://www.innocenceproject.org/understand/Eyewitness-Misidentification.php> (last visited Mar. 16, 2009). This estimation is largely consistent with earlier studies of the role mistaken eyewitness testimony played in wrongful convictions. See C. Ronald Huff et al., *Guilty Until Proved Innocent: Wrongful Conviction and Public Policy*, 32 CRIME & DELINQ. 518, 524 (1986); Arye Rattner, *Convicted But Innocent: Wrongful Conviction and the Criminal Justice System*, 12 L. & HUM. BEHAV. 283, 289 (1988).

<sup>194</sup> See CUTLER & PENROD, *supra* note 28, at 14–15; see also *United States v. Burton*, No. 3:97-cr-154, 1998 U.S. Dist. LEXIS 18730, at \*11–13 (E.D. Tenn. Oct. 8, 1998). These limits include how an individual’s ability to remember a

Under either a liberal or a more stringent admissibility standard, expert testimony on eyewitnesses should be deemed reliable.<sup>195</sup> The field's array of claims has been tested and peer-reviewed multiple times, and there even exists concrete data regarding the degree of general acceptance of particular claims among experts.<sup>196</sup> Despite these bona fides, however, eyewitness experts have often met with a frosty reception from federal judges during admissibility hearings.<sup>197</sup> Appeals regarding the exclusion of eyewitness testimony, for example, have found appellate judges offering vague or unusual arguments when finding no abuse of discretion in the decision of the trial court.<sup>198</sup> The majority of published admissibility decisions regarding eyewitness experts, however, avoid reliability concerns altogether and focus on the institutional problems that eyewitness experts may create.<sup>199</sup> Despite a 1984 amendment to Federal Rule of

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face accurately declines rapidly after long periods of time, the weakened ability to remember a face when a weapon is present, or the additional difficulties in eyewitness recall that occur when the witness is of a different race than the person he witnesses. See CUTLER & PENROD, *supra* note 28, at 70, 101–02, 104–06.

<sup>195</sup> Some critics, such as Dr. Ebbe Ebbesen, have argued that because many of these claims have been tested in mock “crimes” on university campuses, they lack sufficient external validity. See, e.g., *Burton*, 1998 U.S. Dist. LEXIS at \*35–39.

<sup>196</sup> See Saul M. Kassin et al., *On the 'General Acceptance' of Eyewitness Testimony Research: A New Survey of the Experts*, 56 AM. PSYCHOLOGIST 405, 405 (2001) (reporting an approximately 80% “agreement rate” for “30 eyewitness phenomena” among surveyed psychologists).

<sup>197</sup> Robert J. Hallisey, *Experts on Eyewitness Testimony in Court—A Short Historical Perspective*, 39 HOW. L.J. 237, 282–85 (1995).

<sup>198</sup> *Amador-Galvan*, 1997 U.S. App. LEXIS at \*4–5. The judge in *Amador-Galvan* upheld the exclusion of an eyewitness expert on the grounds that “the testimony ... ‘is based upon suspect, scientific analysis in that the alleged scientific analysis is abstract, incomplete, and disregards many known variables impacting upon the receipt of evidence and the decision making process of juries.’” *Id.* What these other variables are, and why the evidence is incomplete, is unclear from the opinion, though in fairness, an inadequate *Daubert* proffer may have been to blame. The judge in *United States v. Brien*, by contrast, upheld the district court’s exclusion by noting that the expert’s testimony “does not concern a single long-established scientific principle such as whether radar can measure speed.” *Brien*, 59 F.3d at 277. How such principles are “established,” and by whom is unclear, but to rule that only “long-established” principles are admissible as expert testimony is an interpretation of *Daubert* that most commentators would reject.

<sup>199</sup> See, e.g., *United States v. Smithers*, 212 F.3d 306, 314 (6th Cir. 2000); *United States v. Kime*, 99 F.3d 870, 884 (8th Cir. 1996) (quoting *Bachman v. Leapley*, 953 F.2d 440, 441 (8th Cir. 1992); *United States v. Dorsey*, 45 F.3d 809, 816 (4th Cir. 1995)); *United States v. Larkin*, 978 F.2d 964, 971 (7th Cir. 1992).

Evidence 704 that states, “testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact,”<sup>200</sup> some judges openly worry that eyewitness experts usurp the role of the jury by “deciding” witness credibility.<sup>201</sup> In his concurring opinion in *United States v. Hall*, Judge Easterbrook suggests the basis for this fear:

Consider, for example, the proposition—fundamental to any system that relies on lay adjudicators—that jurors understand and follow the instructions given by the court. It may be that jurors don’t understand legalese, or if they understand the instructions don’t follow them . . . Or consider cross-examination. Jurors may believe that witnesses who hesitate, perspire, or fidget during cross-examination are hiding the truth. This is the view that underlies polygraph examinations, but without the precision of measurement . . . Because trials rest on so many contestable empirical propositions, including those about eyewitness recollection, it always would be possible to offer expert evidence along these and related lines.<sup>202</sup>

“[A] trial *about the process of trials*,” he later contends, only distracts the jury from the issue of the criminal charge at hand.<sup>203</sup> In other words, the admission of expert eyewitness testimony or polygraph experts into court might have long-term deleterious effects on trials,<sup>204</sup> particularly if their admission encourages defendants to use social science research to challenge other foundations of the trial process.<sup>205</sup> The possibility that courts will be particularly unreceptive to such testimony merits some attention in empirical work on admissibility decisions.

#### *D. Attitudinal Goals: Advancing Judicial Policy Preferences*

Judicial goals also may include policy preferences, the desire to reach particular outcomes or patterns of outcomes regardless of the law. Judicial attitudes will be connected to the larger political framework by the process of appointment; judges

<sup>200</sup> FED. R. EVID. 704(a).

<sup>201</sup> See *Hall*, 165 F.3d at 1119 (Easterbrook, J. concurring) (discussing the effect on jurors of an expert’s testimony).

<sup>202</sup> *Id.* at 1119.

<sup>203</sup> *Id.*

<sup>204</sup> Simmons, *supra* note 3, at 1046–47.

<sup>205</sup> In one such (pre-*Daubert*) example noted by Easterbrook, *Gacy v. Welborn*, 994 F.2d 305, 306 (7th Cir. 1993), the defendant appealed his death sentence using social science research to attack the clarity of the court’s jury instructions on mitigating factors.

appointed by conservative presidents may have different desired legal outcomes than those appointed by liberal executives. While judges are not legislators, they do retain considerable freedom to shape decision outcomes, and often do so along a standard liberal-conservative continuum.<sup>206</sup> As discussed in Section III, such discretion varies among different judicial contexts—a Supreme Court justice ruling on an issue of constitutional law has far more discretion than a trial court judge implementing a matter of routine procedure. *Daubert* decisions, I have noted, are contexts where trial court judges are relatively unconstrained, and there is little reason to expect that liberal and conservative positions on torts and criminal prosecution will be absent from admissibility decisions. A more conservative judge, for example, might tend to side with business litigants in tort cases, while a liberal judge might be more apt to question the government's use of expert testimony in criminal cases.<sup>207</sup>

Some measure of judicial ideology must also be included as a control for previously discussed factors. Do all judges view civil plaintiffs as more likely to offer unreliable testimony, or are only conservative judges more likely to do so? Would a liberal judge be more willing to tempt caseload pressures by limiting or excluding prosecutorial testimony? Such findings might show that a construction of reliability was heavily mediated by prior political positions, rather than a more widespread, institutional suspicion of evidence offered by particular litigant classes. While mapping standard liberal-conservative attributes onto federal judges is not an easy task, political scientists who study judicial behavior have developed reasonably valid measurements for doing so.<sup>208</sup>

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<sup>206</sup> See SEGAL & SPAETH, *supra* note 82, at 1, 65 (arguing that ideology greatly influences justices' decisions).

<sup>207</sup> See Buchman, *supra* note 7, at 682–88 (finding that ideology influences judges decisions to admit evidence).

<sup>208</sup> The best such measurements for federal appellate and district judges, in my view, are Giles scores. Giles begins by relying on Poole's DW-Nominate scores (scores for each Senator and President, which vary from -1 to 1 on a liberal-conservative scale). Federal judges receive the appointing President's ideology score, unless their home-state senators are the same party as the President. In this case, the judge is either given either the home-state senator's Poole score, or if both home-state senators are of the president's party, the average of the two. This method has two advantages over simply coding federal judges as appointed by Republicans or Democrats. First, it recognizes that political party and attitudes are related but distinct; G. W. Bush appointees are more likely to be conservative than Ford or Eisenhower appointees. Secondly, it accounts for the potential moderating influence of home-state senators; Nixon,

*E. External Variables*

Finally, some variables in the admissibility process will be independent of the deciding judge. I have already suggested that despite their relative autonomy, district judges may constrain themselves to on-point precedent, whether because of normative concerns or to reduce workload. The proper normative role of precedent in judicial decision-making, as well as its actual empirical impact, is hotly debated by both scholars of judicial behavior<sup>209</sup> and the justices of the Supreme Court.<sup>210</sup> Where precedent is surely at its strongest, however, is when the facts of that precedent and the facts in the current case essentially mirror each other.<sup>211</sup> This might occur with some regularity in *Daubert* cases, where individual litigants in different courts move to exclude or introduce similar types of expert testimony. Given the factors discussed above, there is likely to be some variation in how different judges initially address a particular type of expert testimony; as time goes on, however, a particular construction of reliability may become dominant. Decisions that are unusually thorough, thoughtful, or time-consuming should be more likely to be cited as precedent, especially since a judge should be less likely to duplicate an already existing *Daubert* analysis. The greatest opportunity for the full play of reliability concerns, institutional concerns, and policy preferences to shape a particular construction of reliability may be in the first few instances a particularly type of expert testimony faces admissibility hearings. Afterwards, the costs of engaging in full-bore *Daubert* analyses may be too high, and variation will tend to

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for example, may have appointed more liberal justices in Pennsylvania than in Utah, because the Republican senators in Pennsylvania were more liberal than he was. See generally Keith Poole, *Description of NOMINATE Data*, Jul. 13, 2004, <http://voteview.com/page2a.htm> (discussing how DW-Nominate data is calculated); see also generally Michael W. Giles et al., *Picking Federal Judges: A Note on Policy and Partisan Selection Agendas*, 54 POL. RES. Q. 623, 631 (2001) (discussing how the authors relied on Poole's scores to calculate their own data).

<sup>209</sup> See, e.g., Brisbin, *supra* note 86, at 1005–06, 1008–09, 1014; Gillman, *supra* note 96, at 479–80, 482; HANSFORD & SPRIGGS, *supra* note 164, at 18–23; Jeffrey A. Segal & Harold J. Spaeth, *The Influence of Stare Decisis on the Votes of United States Supreme Court Justices*, 40 AM. J. POL. SCI. 971, 971–73 (1996).

<sup>210</sup> See *Payne v. Tennessee*, 501 U.S. 808, 827, 835 (1991) (quoting *Burnet v. Coronado Oil & Gas Co.*, 285 U.S. 393, 406 (1932); *Smith v. Allwright*, 321 U.S. 649, 665 (1944)).

<sup>211</sup> See Richard L. Pacelle, Jr. et al., *Keepers of the Covenant or Platonic Guardians? Decision Making on the U.S. Supreme Court*, 35 AM. POL. RES. 694, 708–16 (2007) (finding that the Court most often follows precedent when cases have similar facts).

be greater between different types of expert testimony rather than within them.

Second, the model should consider the relative resources that individual litigant classes bring to the table. A judge might grant the prosecution's motion to exclude a psychologist who would testify on eyewitness testimony not because he assumes the defendant is desperate or fears the effects of such witnesses on the court system, but because the defense attorney has failed to describe what that expert will do, why he satisfies *Daubert*, or why his testimony will be reliable, relevant, and helpful.<sup>212</sup> The success rate for civil defendants, for example, may in part be explained by their superior resources in hiring high-quality experts and retaining attorneys with considerable experience in dealing with admissibility issues. An accused criminal, by contrast, may rely on a public defender with little or no experience in writing *Daubert* proffers, or have insufficient funds to hire an expert with adequate credentials.<sup>213</sup> Litigant resources should also be included in the model to better isolate the possibility that judges use litigant identity as a proxy for reliability, as discussed above, or simply dislike particular litigants on policy grounds.

Next, society in general may hold assumptions about the reliability of certain fields or types of testimony, or be predisposed them to view these fields in a favorable or unfavorable light. Jennifer Mnookin, for example, has convincingly argued that the legal system of the late 19<sup>th</sup> and early 20<sup>th</sup> century had inculcated the belief that individuals generally, and criminals specifically, possessed unique physiological traits that permitted "comprehension of a deeper, otherwise unattainable reality."<sup>214</sup> As such, judges were more

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<sup>212</sup> My own sense of such briefs, though I have read only a few, is that they vary wildly in quality; experience with *Daubert* motions and a substantive understanding of the underlying science are the most likely causes of this variation. I do not expect that these qualities will be distributed evenly throughout all categories of attorneys.

<sup>213</sup> Most jurisdictions do not extend *Ake v. Oklahoma's* narrow holding regarding the right to experts in death penalty cases to a more general right to experts for indigents. See 470 U.S. 68, 83 (1985); Paul C. Giannelli, *Ake v. Oklahoma: The Right to Expert Assistance in a Post-Daubert, Post-DNA World*, 89 CORNELL L. REV. 1305, 1310–11, 1365–69 (2004).

<sup>214</sup> Jennifer L. Mnookin, *Scripting Expertise: The History of Handwriting Identification Evidence and the Judicial Construction of Reliability*, 87 VA. L. REV. 1723, 1808, *passim* (quoting Carlo Ginzburg, *Clues: Roots of an Evidential Paradigm*, in CLUES, MYTHS, AND THE HISTORICAL METHOD 101, 105 (John &

inclined to accept various nascent forensic individuation techniques as valid and reliable. Further exploration of current social or intellectual paradigms might reveal similar tendencies of courts and society alike to more readily view certain ideas as scientific.

Finally, it is possible that circuits themselves serve as relevant independent variables. Circuits may differ in their interpretation and application of *Daubert*, leading to differences that do not draw the Supreme Court's attention but may affect outcomes nevertheless.<sup>215</sup> These rules and norms may constrain judicial behavior in ways that *Daubert* itself does not do, and are worth including in the model.

#### V. CONCLUSION: NOTES ON GETTING *DAUBERT* DATA

Building and testing such a model is beyond the scope of this paper. I hope, however, I have made a convincing case that doing so is useful and necessary. Empirical research on *Daubert* has already begun: Risinger, for example, has systematically examined differences in decision outcomes between civil and criminal admissibility decisions,<sup>216</sup> while Buchman has found that political ideology affects admissibility decisions in federal civil cases at the trial court level.<sup>217</sup> The body of work is sparse, however, and many questions remain. Do presumed reliability, superior resources, or political attitudes lie behind the significant advantages which accrue to criminal prosecutors and civil defendants? When do institutional concerns affect *Daubert* decisions, and how can one measure the effect of those concerns? Are local constructions of reliability for new technologies heavily path-dependent, making initial or particularly studious judicial assessments of reliability the critical cases? I hope my article has made the case that such questions are interesting and necessary.

I conclude by noting one major obstacle to the empirical study of *Daubert*. A primary problem, for either qualitative or quantitative studies, is ensuring that inferences are drawn from

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Anne C. Tedeschi trans., 1989)).

<sup>215</sup> See Ruth Saunders, *The Circuit Courts' Application of Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 46 DRAKE L. REV. 407, 414, 422 (1997) (discussing how the split in Circuit Courts' readings of *Daubert* lead to different treatment of expert testimony).

<sup>216</sup> Risinger, *supra* note 8, at 99, 102–104.

<sup>217</sup> Buchman, *supra* note 7, at 688.

representative data. However, obtaining a representative or random sample of admissibility decisions from the universe of all federal district court decisions will be quite difficult. Standard database searches, such as Westlaw and Lexis, garner some district court decisions, but because the available cases are a small and possibly unrepresentative sample of the whole, relying on them for generalizations risks making serious inferential errors. If, for example, decisions to exclude expert testimony are more likely to be published, one might overestimate the absolute proportion of excluded decisions if only published cases are studied.<sup>218</sup> Relying on appellate decisions for data mostly overcomes this problem, as federal appellate decisions, at least new ones, are reliably recorded. The gain is somewhat illusory, though, as the benefit of easier sampling is offset by the skewed picture of *Daubert* decisions appellate opinions create. A more valid study of *Daubert* decisions should be conducted “on the ground,” where the full range of issues are addressed, and the judges do not employ *Joiner* in reviewing a previous determination.

In other research agendas, scholars have relied upon case data from the Administrative Office of the United States Courts to create a representative data base.<sup>219</sup> The Federal Judiciary’s PACER (Public Access to Court Electronic Records) system may also grant researchers access to the closest approximation of the actual universe of district court cases, at least for recent years.<sup>220</sup> However, these free or low-cost solutions suffer from a lack of appropriate search capabilities. Though quite useful for studies that test general propositions about federal decisions, these databases do not permit the ready retrieval of *Daubert* decisions.

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<sup>218</sup> Peter Siegelman & John J. Donohue III, *Studying the Iceberg from its Tip: A Comparison of Published and Unpublished Employment Discrimination Cases*, 24 L. & SOC’Y REV. 1133, 1134–35, 1144–45 (1990). Another problem with relying on judicial decisions is that *Daubert*’s primary impact may be on persuading parties to settle, rather than on trials. I concede this probability; I simply wish to study a different facet of the process. For a look at how *Daubert* factors in the early stages of litigation, see Herbert M. Kritzer, *Daubert in the Law Office: Routinizing Procedural Change*, 5 J. EMPIRICAL LEGAL STUD. 109, 110–11 (2008).

<sup>219</sup> Clermont & Eisenberg, *supra* note 174, at 128–30; Kevin M. Clermont & Theodore Eisenberg, *Appeal from Jury or Judge Trial: Defendants’ Advantage*, 3 AM. L. & ECON. REV. 125, 127 (2001).

<sup>220</sup> See PACER, <http://www.pacer.psc.uscourts.gov> (last visited Mar. 16, 2009). Most, but not all federal jurisdictions make their work product available for PACER.

Emerging commercial solutions such as *Daubert Tracker*,<sup>221</sup> *LexisNexis CourtLink*,<sup>222</sup> or *Westlaw Dockets Coverage*<sup>223</sup> rely on the same information as PACER but may provide the search capabilities that make a systematic study of *Daubert* district decisions feasible.<sup>224</sup> That said, such solutions may be too expensive for the individual researcher to employ. Moreover, broader searches such as these will require limiting the study to a few districts or a narrow slice of time, barring prodigious resources. Regardless of how the researcher ultimately selects cases, she must understand the tradeoffs inherent in that choice and adjust her interpretation of the data and her presentation of the results accordingly.

None of this is to say that empirical research on *Daubert* must be quantitative. Indeed, while quantitative research provides more reliable generalizations for large numbers of cases and a more precise estimate of uncertainty, qualitative explorations of particular case areas may uncover new variables, explicate the relationship between them, or give the researcher a better understanding of the judge's purported justification for the decision. This is particularly true for the institutional concerns listed in Part IV, which may not easily translate into quantitative measures. In either case, if scholars and practitioners alike want a better understanding of admissibility decisions, as well as a reasonable shot at accurately predicting judicial reactions to new technology like fMRI scans, there is much work to do.

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<sup>221</sup> See *Daubert Tracker*, <http://www.dauberttracker.com> (last visited Mar. 16, 2009).

<sup>222</sup> See *LexisNexis Courtlink*, <http://lexisnexis.com/courtlink/online/> (last visited Mar. 16, 2009).

<sup>223</sup> See *West, Westlaw Dockets Coverage*, <http://west.thomson.com/productdetail/1-6676-5/RM166765/productdetail.aspx> (last visited Mar. 16, 2009).

<sup>224</sup> For more information on these options, see Linda Fields, *Using Docket and E-Filing Retrieval Systems for Legal Research*, 33 COLO. LAW. 61, 61–62 (2004), available at <http://www.aallnet.org/chapter/coall/Lrc/Lrc1104.pdf>.