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The Consensus Rule: A New Approach to Scientific Evidence

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The Consensus Rule: A New Approach to Scientific Evidence

*Edward K. Cheng**

Founded on good intentions but unrealistic expectations, the dominant Daubert framework for handling expert and scientific evidence should be scrapped. Daubert asks judges and jurors to make substantively expert determinations, a task they are epistemically incompetent to perform as laypersons. As an alternative, this Article proposes a new framework for handling expert evidence. It draws from the social and philosophical literature on expertise and begins with a basic question: How can laypersons make intelligent decisions about expert topics? From there, it builds its evidentiary approach, which ultimately results in an inference rule focused on expert communities. Specifically, when dealing with factual issues involving expertise, the legal system should not ask factfinders the actual substantive questions, but instead should reframe its questions to be deferential to the relevant expert community. To satisfy the requirement of proving causation in a toxic tort case, the question should not be: Does drug A cause disease X? The more appropriate question is: Does the scientific community believe that drug A causes disease X? This deferential approach solves the epistemic competency problem, repairs many of the unintended structural distortions created by Daubert, and ultimately reflects a better understanding of science.

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INTRODUCTION

Since *Daubert v. Merrell Dow Pharmaceuticals, Inc.*¹ was decided in 1993, it has framed nearly every debate about experts in court and spawned an enormous literature. What constitutes science? Have judges been imposing the correct standard, and if not, what factors should they use to determine whether experts are reliable? Should judges only focus on an expert’s methods, or the conclusions as well? All of these questions and more—none of which have been (or can be) easily resolved—are the offspring of *Daubert*.

But hardly anyone asks the more foundational question: How does a court—a lay decisionmaker—make intelligent decisions about expert topics?² *Daubert* assumes that the answer involves judicial gatekeeping. This assumption is in many ways natural and intuitive. After all, judges enforce evidentiary rules, and evidentiary rules are primarily designed to ensure reliable evidence and promote accurate decisionmaking. If we have concerns about expert evidence, then surely judges should be the ones who ensure that the expert witnesses are reliable.

1. 509 U.S. 579 (1993).

2. *But see* Ronald J. Allen & Esfand Nafisi, *Daubert and Its Discontents*, 76 BROOK. L. REV. 131, 136 (2010) (criticizing reform efforts for tweaking or proposing substantive rules “[r]ather than dealing directly with the epistemological problem expert testimony poses”); Ronald J. Allen, *Expertise and the Daubert Decision*, 84 J. CRIM. L. & CRIMINOLOGY 1157, 1160–67 (1994) (questioning whether the *Daubert* model of educating juries can really work under the common law scheme of proof).

Yet, are *Daubert's* assumptions correct? Is gatekeeping indeed the best way to promote more accurate legal decisions about expert topics? Neither the jury nor the judge typically knows anything about the subject of proposed expert testimony—indeed, that is precisely the reason why the expert is there in the first place. If judges are not experts, how can they effectively gatekeep? And if juries are not experts, how can they ultimately decide cases competently? Before we ask how to do *Daubert* better, we need to ask whether *Daubert* was right in the first place.

In this Article, I argue that the *Daubert* framework is simply wrong. *Daubert* may cohere with ordinary evidentiary practice, but that traditional structure makes little sense in the expert context. The judge and the jury, lacking in expertise, are not competent to handle the questions that the *Daubert* framework assigns to them. The flurry of post-*Daubert* educative efforts—reference manuals, scholarly articles, workshops, etc.—have improved the situation by providing judges with rudimentary tools to assist their gatekeeping, but the project is ultimately doomed to fail. As the social science literature makes clear, expert competency requires years of immersive experience, and no amount of primers, short courses, or presentations will close the gap.

If *Daubert* is a fool's errand, what are we to do? I argue that solving the problem of scientific evidence requires a fundamental shift in the types of questions that the legal system asks on expert topics. When dealing with expert topics, the legal system should not ask factfinders the actual substantive questions, but instead should reframe its questions to be deferential to the relevant expert community. To satisfy the requirement of proving causation in a toxic tort case, the question should not be: Does drug A cause disease X? The more appropriate question is: Does the scientific community believe that drug A causes disease X?

This framework, which I will refer to as the “Consensus Rule,” is far superior to our current treatment of questions involving specialized knowledge. It is more epistemically defensible given the competency of lay decisionmakers. It promotes more accurate decisionmaking and reflects a better understanding of science. And properly implemented, it restores the balance of power between judge and jury and between trial and appellate courts that the *Daubert* framework has deeply distorted. All the while, the proposed regime retains the system's adversarial values and a litigant's ability to call its own experts.

The Article proceeds as follows. Part I details the problems wrought by the *Daubert* framework and the reasons why the legal system went down this mistaken path. Turning over a new leaf, Part II

goes back to basics, examining the foundational question often overlooked in discussions about expert evidence: How can a nonexpert make intelligent decisions about expert topics? As Part II will argue, the optimal answer is that a nonexpert should defer to the expert community rather than engage in dilettantism. Part II then applies this lesson to the legal context, developing the Consensus Rule.

Part III details the many conceptual and structural advantages of the Consensus Rule. Among other things, it avoids the epistemic competence problems of *Daubert*, reflects a better understanding of science, and fixes the structural distortions created by the *Daubert* regime.

Part IV responds to potential objections to the Consensus Rule. For example, critics may claim that a deferential approach to expert evidence is illegitimate because it effectively abdicates the court's role as an independent factfinder. Or they may argue that the stance is too conservative vis-à-vis new scientific theories, or too radical a departure from current legal practice. Part IV argues that deferring to the scientific community is none of these things. Deferring to superior knowledge is not only sensible but also inevitable, and pockets of the law already utilize deference rules. Part IV also discusses the practical issue of determining consensus and reviews some conventional and innovative solutions.

Part V offers a few brief implementation examples, showing how the Consensus Rule would work with regard to causation evidence in toxic torts, social science evidence, and forensics. The Article then concludes with some questions for the future.

I. THE SCIENTIFIC EVIDENCE PROBLEM

Scientific questions are at the heart of some of the biggest legal awards and settlements today: Does glyphosate, the pervasive herbicide that most homeowners know as Roundup, cause non-Hodgkins lymphoma?³ Does bisphenol A (“BPA”), a plasticizer once found in water bottles and other containers, disrupt the endocrine system?⁴ Does Vioxx, the formerly popular arthritis drug, cause heart attacks and

3. Cases in the glyphosate litigation have yielded verdicts of \$80 million, \$289 million, and \$2 billion. Patricia Cohen, *\$2 Billion Verdict Against Monsanto Is Third to Find Roundup Caused Cancer*, N.Y. TIMES (May 13, 2019), <https://www.nytimes.com/2019/05/13/business/monsanto-roundup-cancer-verdict.html> [https://perma.cc/M647-JHCN].

4. Brent A. Bauer, *What Is BPA, and What Are the Concerns About BPA?*, MAYO CLINIC (May 14, 2021), <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331> [https://perma.cc/J4TU-RV98].

strokes?⁵ Can the radiation emitted by your smartphone cause brain cancer?⁶ Billions of dollars have turned on these scientific questions over the last decade. So how the legal system handles scientific evidence matters a great deal. The relationship, however, between courts and scientific experts is an uneasy one, frequently filled with complaints, recriminations, and proposals for reform.

A. Scientific Evidence Past and Present

Scientific evidence has long bedeviled the legal system. Struggles over experts and their testimony go back at least to the beginning of the nineteenth century,⁷ and many of the reforms proposed back then are uncannily familiar to ones proposed today.⁸

The latest cycle of reform arguably began in the 1980s, when defendants and the defense bar complained about courts being hoodwinked by “junk science” in mass tort cases. They accused plaintiff attorneys of manufacturing toxic tort cases by calling dubious scientific experts willing to testify to just about anything. Over time, the accusation of junk science expanded ideologically to include defendants engaging in similar practices (e.g., the tobacco industry⁹), as well as criticisms about the shaky empirical underpinnings of criminal forensics.¹⁰

5. Julie Steenhuysen, *Long-Term Study Confirms Vioxx Heart Risks*, REUTERS (Oct. 13, 2008, 4:42 PM), <https://www.reuters.com/article/us-stroke-vioxx/long-term-study-confirms-vioxx-heart-risks-idUSTRE49C84M20081013> [<https://perma.cc/3RMZ-UA3N>].

6. Siddhartha Mukherjee, *Do Cellphones Cause Brain Cancer?*, N.Y. TIMES MAG. (Apr. 13, 2011), nytimes.com/2011/04/17/magazine/mag-17cellphones-t.html [<https://perma.cc/VT7D-4DWT>].

Observant readers will likely note that all of these examples involve toxic torts, whereas the problems of scientific and expert evidence extend well beyond the toxic tort context. This Article’s primary target is scientific evidence in the toxic tort context, even though the solutions clearly have broader implications. Applications to other contexts will be largely left to future work.

7. For a history of scientific expert testimony, see Tal Golan’s excellent book, *LAW OF MEN AND LAWS OF NATURE: THE HISTORY OF SCIENTIFIC EXPERT TESTIMONY IN ENGLAND AND AMERICA* (2004).

8. Samuel R. Gross, *Expert Evidence*, 1991 WIS. L. REV. 1113, 1220.

9. See generally DAVID MICHAELS, *DOUBT IS THEIR PRODUCT: HOW INDUSTRY’S ASSAULT ON SCIENCE THREATENS YOUR HEALTH* 173 (2008) (explaining how the tobacco industry used its extensive resources to aggressively challenge the testimony of plaintiffs’ expert witnesses, which hindered plaintiffs by driving up the cost of litigation); NAOMI ORESKES & ERIK M. CONWAY, *MERCHANTS OF DOUBT: HOW A HANDFUL OF SCIENTISTS OBSCURED THE TRUTH ON ISSUES FROM TOBACCO SMOKE TO GLOBAL WARMING* 270 (2010) (noting that one of the so-called scientific experts in favor of the tobacco industry was actually a retired “solid-state physicist, not a biologist, oncologist, or physician”).

10. See, e.g., D. Michael Risinger, Mark P. Denbeaux & Michael J. Saks, *Exorcism of Ignorance as a Proxy for Rational Knowledge: The Lessons of Handwriting Identification “Expertise,”* 137 U. PA. L. REV. 731 (1989) (describing the lack of empirical studies on the efficacy of handwriting expertise).

The Supreme Court's decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* was, and still is, the watershed moment in this most recent cycle of debate over scientific and expert evidence. Doctrinally, *Daubert* is usually remembered for its multifactor test for scientific reliability: falsifiability, peer review, error rates and standards, and general acceptance.¹¹ But as I and others have argued, these nonexclusive factors are often more akin to incantation than an operational requirement.¹² The factors are perhaps applicable and helpful in the toxic tort context (understandably, given the facts in *Daubert*¹³) but are often a poor guide in other contexts. Studies have also shown that legal actors often misunderstand the factors or rely on other proxies.¹⁴

As such, *Daubert's* most enduring legacy is not its multifactor test, but instead its pronouncement that judges are gatekeepers. *Daubert* ended the era in which experts had potentially free reign over potentially gullible juries. Judges now separate good science from bad science and allow only the good science to get to the jury. The ensuing *Daubert* revolution therefore has taken this gatekeeping function as a baseline assumption. Reform efforts have focused on either improving gatekeeping or generating evidence for which gatekeeping would be simple or largely superfluous. For example, commentators have proposed using neutral experts or expert panels, constraining the expert hiring process, or using specialized judges or magistrates.¹⁵ Practical efforts have tried to educate judges about science or provide reading materials for judges facing scientific questions.¹⁶

What reformers have not asked, however, is whether gatekeeping—or at least the gatekeeping envisioned by *Daubert*—is advisable at all. What reformers have neglected are the assumptions that underlie the gatekeeping solution itself and whether those assumptions are reasonable. As we shall see, they are not.

11. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 593–94 (1993).

12. 5 DAVID L. FAIGMAN, EDWARD K. CHENG, JENNIFER L. MNOOKIN, ERIN E. MURPHY, JOSEPH SANDERS & CHRISTOPHER SLOBOGIN, *MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY* § 41:10 (2020–2021 ed., 2020).

13. The key question in *Daubert* was whether the drug Bendectin, used to prevent morning sickness (hyperemesis) in pregnant women, caused birth defects in their children. *Daubert*, 509 U.S. at 582–83.

14. Jennifer Leigh Groscup, *Judicial Decision Making About Expert Testimony in the Aftermath of Daubert and Kumho*, 4 J. FORENSIC PSYCH. PRAC. 57, 63–64 (2004).

15. See Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 56 (1901) (proposing expert tribunals); James R. Dillon, *Expertise on Trial*, 19 COLUM. SCI. & TECH. L. REV. 247, 296–99 (2018) (advocating for the “creation of a new division” of the federal court system staffed with scientific experts).

16. E.g., Joe S. Cecil, *Science Education for Federal Judges*, 56 JUDGES' J., Fall 2017, at 8, 9 (describing various education efforts by the Federal Judicial Center to educate judges in science).

B. The Problem with Daubert

Consider the typical context in which judges are asked to be gatekeepers, often called the “battle of the experts.” The plaintiff claims that a chemical caused his injury, so at a pretrial *Daubert* hearing, the plaintiff proffers an expert who will (unsurprisingly) testify that the chemical can cause the injury. The defendant manufacturer of course denies that its product can cause such an injury. The defendant thus proffers an expert who will (again unsurprisingly) testify that the product does *not* cause such an injury. There is some back and forth, and then the judge, acting as gatekeeper, must take the presented information and decide whose testimony is sufficiently reliable to testify at trial. Further, assuming the case ultimately goes to trial, the jury, acting as factfinder, must determine which side the evidence favors.

This procedure, however, is paradoxical. Why has the legal system permitted the parties to offer experts in the first place? Well, for the simple reason that neither the judge nor the jury know anything about the specialized field at the core of the litigation. But if that is the case, how can the judge or the jury possibly make an intelligent decision?¹⁷ If the experts disagree, as they inevitably will, what makes the lay decisionmakers qualified to choose between them?

This “expert paradox” was not lost on Judge Learned Hand, who described the puzzle over a century ago:

[H]ow can the jury judge between two statements each founded upon an experience confessedly foreign in kind to their own? It is just because they are incompetent for such a task that the expert is necessary at all.¹⁸

Although perhaps the most famous articulation of the paradox, Judge Hand’s was not the first. Indeed, the basic problem has ancient roots, dating at least as far back as the philosopher Anacharsis from the sixth century BCE:

Who is to be the judge of skill? . . . [I]t cannot be the nonexpert, for he does not know what constitutes skill . . .¹⁹

In their insightful article attempting to explain an expert’s theoretical role in litigation, Joseph Miller and Ron Allen identify two

17. Gross, *supra* note 8, at 1182 (“We call expert witnesses to testify about matters that are beyond the ordinary understanding of lay people (that is both the major practical justification and a formal legal requirement for expert testimony), and then we ask lay judges and jurors to judge their testimony.”).

18. Hand, *supra* note 15, at 54.

19. DOUGLAS WALTON, APPEAL TO EXPERT OPINION: ARGUMENTS FROM AUTHORITY, at xiii (1997) (citing Sextus Empiricus who reported Anacharsis of Scythia as posing this classic problem).

possible paths out of the expert paradox.²⁰ First, the role of the expert may be to educate the jury (and the judge) to the point at which the jury can make its own informed decision. This educative solution breaks the expert paradox by transforming the jury or judge into a temporary expert, eliminating the incompetency problem. Second, the role of the expert may be to provide an opinion to which the jury defers. This deference solution breaks the paradox by enabling the lay decisionmaker to avoid making any decision requiring expertise. The layperson merely needs to determine to whom to defer, a decision that it *may* (although perhaps controversially) be competent to make.

Daubert plots primarily an educative path, at least for the judge. By tasking the judge as a gatekeeper, *Daubert* expects judges to learn enough about the underlying science to assess the reliability of an expert's testimony and the underlying scientific studies. To be sure, *Daubert* incorporates "general acceptance" as one of its factors, but the framework principally views judges as making independent decisions.

While *Daubert* itself says little about how the jury solves the paradox, the legal system as a whole suggests an educative path for the jury as well.²¹ Jury instructions assume jurors are competent to make independent decisions, and specifically admonish them against deference based on expertise. Jurors are told to "judge [expert] testimony in the same way that [they] judge the testimony of any other witness,"²² and that they "alone decide how much of a witness's testimony to believe, and how much weight it deserves."²³ As Oklahoma warns, "You are not required to surrender your own judgment to that of any person testifying, based on that person's education, training or experience."²⁴

The structure of legal proof also makes educative presumptions. We foist questions involving expertise, such as whether a chemical caused the plaintiff's disease, whether defendant's policies had a

20. Ronald J. Allen & Joseph S. Miller, *The Common Law Theory of Experts: Deference or Education?*, 87 NW. U. L. REV. 1131, 1131 (1993) (asking whether factfinders are supposed to defer to or be educated by the expert presented). One might argue that this dichotomy between education and deference is a false one, because education only occurs with some deference to the expertise of one's teacher, and deference only legitimately occurs when one has assessed the merits of the teacher's arguments. See, e.g., Adam Perry & Farrah Ahmed, *Expertise, Deference, and Giving Reasons*, 2012 PUB. L. 221 (proposing a hybrid approach). Nonetheless, I find Allen and Miller's dichotomy useful for separating strategies that emphasize the jury's independent judgment (education) versus the expert's superior knowledge (deference). Whether the dichotomy is in reality a spectrum (a possibility acknowledged by Allen and Miller) is very much beside the point.

21. Allen & Miller, *supra* note 20, at 1133 (suggesting that the legal system usually chooses the education model).

22. 7TH CIR. CIV. JURY INSTRUCTIONS § 1.21 (2017).

23. 6TH CIR. CRIM. JURY INSTRUCTIONS § 7.03 (2019).

24. OKLA. UNIF. CRIM. JURY INSTRUCTIONS ch. 13-21 (2d ed. 2020).

statistically disparate impact on minority groups, or whether defendant's behavior harmed competition, directly onto the shoulders of juries. Only in rare instances are jurors asked to defer to experts, such as when deciding the standard of care in medical malpractice. And any review of the sufficiency of evidence assumes both that juries are directly processing the evidence presented and that judges can competently assess the inferences made.

The problem with this education model is that it runs counter to much of the epistemological and social scientific literature surrounding expertise. For both judges and jurors, the *Daubert* framework assumes that given clear explanations, intelligent persons can understand and learn specialized information and then make educated decisions. While this may be true over the course of one's life (or at least educators hope it to be true), it is emphatically not true given the time constraints under which the legal system operates.²⁵ During a legal proceeding, there is scarcely enough time for lay decisionmakers to acquire a surface-level understanding of the material, let alone develop the expertise necessary to make informed judgments.

To be sure, the expertise needed to meaningfully consume scientific information is not the same expertise needed to produce new research and advance the field,²⁶ but it is not something that a layperson can acquire in some daylong or hourlong crash course.²⁷ Perhaps juries and judges do not need ten thousand hours, but they surely need more than ten.²⁸ Just consider the time spent by students in higher education acquiring the requisite background knowledge to even begin navigating their respective fields.

Empirical studies have similarly shown that laypersons have considerable difficulty assessing technical material.²⁹ In psychological

25. Susan Haack, *An Epistemologist in the Bramble-Bush: At the Supreme Court with Mr. Joiner*, 26 J. HEALTH POL. POL'Y & L. 217, 242 (2001); Allen, *supra* note 2, at 1160 ("One can easily imagine cases that would require months of instruction before jurors would be competent to decide intelligently.").

26. HARRY COLLINS, ARE WE ALL SCIENTIFIC EXPERTS NOW? 71 (2014) (describing how "interactional expertise," the working knowledge of a field necessary to discuss ideas, is not the same as "contributory expertise," the knowledge necessary to produce research). Interactional expertise is the ability to talk about a field without actually being a practitioner, the level of expertise necessary for journalists and sociologists. HARRY COLLINS & ROBERT EVANS, RETHINKING EXPERTISE 28–32 (2007).

27. *E.g.*, Cecil, *supra* note 16, at 9 (describing education efforts).

28. As repeat players, judges have more opportunities than jurors to acquire expertise, but this advantage only applies to the broadest of scientific ideas. With generalized dockets, no specific issue is likely to repeat itself.

29. Sanja Kutnjak Ivković & Valerie P. Hans, *Jurors' Evaluations of Expert Testimony: Judging the Messenger and the Message*, 28 LAW & SOC. INQUIRY 441, 473 (2003) (reporting that jurors had "more problems with testimony that was technically complex"); Sophia I. Gatowski, Shirley A. Dobbin, James T. Richardson, Gerald P. Ginsburg, Mara L. Merlino & Veronica Dahir,

experiments, judges admit expert evidence at the same rate regardless of the underlying study's validity.³⁰ At the same time, mock jurors have trouble incorporating scientifically sophisticated arguments or technical criticisms. Jurors can comprehend basic scientific information and respond to criticisms that are "easily recognizable and understood by jurors."³¹ However, jurors appear to miss even mildly sophisticated arguments, such as those about confounders or nonblind testing.³²

These outcomes should really come as no surprise. After all, understanding technical material requires background and context. As one juror analogized in a previous study, if one is not a music major, then information involving clefs and notes is "not going to mean very much to you and you're not going to understand much of [what the expert is] saying."³³ In his dissent to *Daubert*, Chief Justice Rehnquist expressed a similar skepticism, remarking that "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."³⁴

Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-Daubert World, 25 LAW & HUM. BEHAV. 433, 453 (2001) (reporting judicial survey that raises concerns about judges' ability to assess scientific evidence).

30. Margaret Bull Kovera & Bradley D. McAuliff, *The Effects of Peer Review and Evidence Quality on Judge Evaluations of Psychological Science: Are Judges Effective Gatekeepers?*, 85 J. APPLIED PSYCH. 574, 584 (2000); see also Jacqueline Austin Chorn & Margaret Bull Kovera, *Variations in Reliability and Validity Do Not Influence Judge, Attorney, and Mock Juror Decisions About Psychological Expert Evidence*, 43 LAW & HUM. BEHAV. 542, 543 (2019) (concluding upon review of the literature that "[judges] may lack the skills necessary to detect flaws in research").

31. Chorn & Kovera, *supra* note 30, at 555; see also Valerie P. Hans, David H. Kaye, B. Michael Dann, Erin J. Farley & Stephanie Albertson, *Science in the Jury Box: Jurors' Comprehension of Mitochondrial DNA Evidence*, 35 LAW & HUM. BEHAV. 60, 69 (2011) (reporting that jurors understood mitochondrial DNA evidence); Jacqueline L. Austin & Margaret Bull Kovera, *Cross-Examination Educates Jurors About Missing Control Groups in Scientific Evidence*, 21 PSYCH. PUB. POL'Y & L. 252, 261–62 (2015) (observing that jurors incorporated criticisms about missing control groups).

32. Lora M. Levett & Margaret Bull Kovera, *The Effectiveness of Opposing Expert Witnesses for Educating Jurors about Unreliable Expert Evidence*, 32 LAW & HUM. BEHAV. 363, 370 (2008) (confounders); Chorn & Kovera, *supra* note 30, at 556 (nonblind testing); see also Margaret Bull Kovera, Bradley D. McAuliff & Kellye S. Hebert, *Reasoning About Scientific Evidence: Effects of Juror Gender and Evidence Quality on Juror Decisions in a Hostile Work Environment Case*, 84 J. APPLIED PSYCH. 362, 372 (1999) (observing that "jurors may have relied on heuristic cues[, not evidence quality,] when evaluating the validity of [expert testimony]").

33. Ivković & Hans, *supra* note 29, at 474; see also Haack, *supra* note 25, at 225 (analogizing a lay person judging the merits of a scientific claim to an American "asked to judge . . . a crossword puzzle where . . . the solutions are all in Turkish").

34. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 600 (1993) (Rehnquist, C.J., concurring in part and dissenting in part); see also *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 147–48 (1997) (Breyer, J., concurring) (noting that gatekeeping "ask[s] judges to make subtle and sophisticated determinations about scientific methodology and its relation to the conclusions" but recognizing that "judges are not scientists and do not have the scientific training that can facilitate the making of such decisions").

More hazardous are instances in which laypersons *think* that they understand the material but *in reality* do not.³⁵ Yes, the nonexpert can simply read the primary source material. The nonexpert may even comprehend the words or get the “gist.” But the nonexpert does not truly understand the results because he lacks context.³⁶ Without the backstory, the layperson cannot set his priors correctly, and he may overvalue individual studies or datapoints, since—to recall an old evidentiary adage—“a brick is not a wall.”³⁷

As sociologist Harry Collins has warned, “distance leads to enchantment.”³⁸ The farther one is from the point of knowledge creation, the more certain the conclusions often appear. This is why media depictions of scientific discoveries make them appear to be more certain (and more predestined) than they actually are.³⁹ This is also why disagreements, particularly in new and unsettled areas of scientific inquiry, “do *not* mean that one of the parties is wrong or practicing junk science or just shilling for one side or outright lying.”⁴⁰

Ironically, the structure of legal proof makes the epistemic plight of lay decisionmakers even worse. Understanding a single stream of scientific information, presented by a neutral teacher (much like you would in a college classroom), is already hard enough, as most could attest. But that supportive environment is not the one in which we ask legal decisionmakers to learn. Instead, the adversarial system guarantees warring experts. And to decide between warring experts on substantive grounds, it stands to reason that the decisionmaker would actually have to have a *higher* level of expertise than the disputants themselves.⁴¹

Multifactor tests or checklists are not the solution either. Generally speaking, rules can help people with insufficient knowledge

35. J.D. TROUT, WONDROUS TRUTHS: THE IMPROBABLE TRIUMPH OF MODERN SCIENCE 199 (2016).

36. COLLINS, *supra* note 26, at 94–96; COLLINS & EVANS, *supra* note 26, at 22–23 (arguing that primary source knowledge is not much better than oversimplified popular accounts, because it makes the consumer think that he is in deep in the literature but yet he has no context).

37. FED. R. EVID. 401 advisory comm. notes on 1975 proposed rule (citing MCCORMICK ON EVIDENCE).

38. COLLINS & EVANS, *supra* note 26, at 20.

39. *Id.* at 21 (describing this phenomenon as “narrow[ing] the bandwidth”).

40. MICHAELS, *supra* note 9, at 165 (criticizing those who think that *Daubert* “provides [a] philosophical tool to help judges identify ‘good science’”).

41. COLLINS & EVANS, *supra* note 26, at 63 (arguing that “downward discrimination,” having the greater expert judge the lesser, is the only reliable arrangement); DAVID COADY, WHAT TO BELIEVE NOW: APPLYING EPISTEMOLOGY TO CONTEMPORARY ISSUES 34–35 (2012) (arguing that only an expert can assess other experts).

navigate difficult questions,⁴² but scientific questions involved in litigation typically defy a paint-by-numbers approach.⁴³ After all, if causation, validity, or other hard scientific questions could simply be resolved through having nonexperts apply some set formula or algorithm, what need would there be for rigorous scientific education and training?⁴⁴ For this reason, online medical symptom checkers have rather poor accuracy rates.⁴⁵ These questions ultimately boil down to scientific judgment—perhaps judgments aided by principles or factors, but judgments just the same.⁴⁶ And such scientific judgment requires expertise. Indeed, the law’s desire to “transmute[] scientific subtleties into formulaic legal shibboleths”⁴⁷ both is hypocritical and shows a profound lack of professional respect for scientists. As lawyers, none of us think that subtle questions of legal interpretation can be resolved through mechanistic algorithms applied by laypersons. Then why do we think that scientific questions can?⁴⁸

C. *The Costs of Daubert*

Having placed its lay decisionmakers in impossible positions, the *Daubert* regime dooms itself to suboptimal decisions. And while

42. See generally FREDERICK SCHAUER, *PLAYING BY THE RULES: A PHILOSOPHICAL EXAMINATION OF RULE-BASED DECISION-MAKING IN LAW AND IN LIFE* (1991).

43. ERICA BEECHER-MONAS, *EVALUATING SCIENTIFIC EVIDENCE: AN INTERDISCIPLINARY FRAMEWORK FOR INTELLECTUAL DUE PROCESS* 233 (2007) (arguing that rules are “a fantasy” in determining the validity of science, so the focus is on principles).

44. Adina Schwartz, A “*Dogma of Empiricism*” Revisited: *Daubert v. Merrell Dow Pharmaceuticals, Inc. and the Need to Resurrect the Philosophical Insight of Frye v. United States*, 10 HARV. J.L. & TECH. 149, 193 (1997) (noting that *Daubert’s* assumption that there exists some algorithm to determine good science is “inconsistent with scientists’ need to undergo lengthy, specialized training”).

45. See, e.g., Michella G. Hill, Moira Sim & Brennen Mills, *The Quality of Diagnosis and Triage Advice Provided by Free Online Symptom Checkers and Apps in Australia*, 212 MED. J. AUSTRAL. 514, 518 (2020). Perhaps the artificial intelligence algorithms will improve eventually, but the point is that medical diagnosis is not a simple rule-based endeavor.

46. *Milward v. Acuity Specialty Prods. Grp.*, 639 F.3d 11, 18 (1st Cir. 2011) (arguing that “[n]o algorithm exists for applying the Hill guidelines [for determining causation]” and that “the use of scientific judgment is necessary” (internal quotation marks omitted)); MICHAELS, *supra* note 9, at 165 (“The *Daubert* decision provides no philosophical tool to help judges identify ‘good science,’ nor could it. There is not just one philosophy of science. No absolute criteria exist for assessing the validity of scientific evidence.”); Kenneth J. Rothman & Sander Greenland, *Causation and Causal Inference in Epidemiology*, 95 AM. J. PUB. HEALTH S144, S150 (2005) (arguing that it is impossible to reduce determinations of validity or causation to a checklist).

47. SUSAN HAACK, *EVIDENCE MATTERS: SCIENCE, PROOF, AND TRUTH IN THE LAW* 98 (2014).

48. For this reason, arguments suggesting that judges can engage in *Daubert* gatekeeping because they are trained in critical thinking or analytical reasoning similarly fall short. See BEECHER-MONAS, *supra* note 43, at 233 (defending judicial gatekeeping based on judges’ training in structured reasoning). Perhaps judges are better than *jurors* because of their training, but that relative advantage is small consolation.

critics are quick to blame the decisionmakers, the fault lies not with them, but with the underlying structure.

Judges, the overwhelming majority of whom are earnest, responsible, and highly educated, will understandably try hard to equip themselves with the tools necessary to make these decisions requiring expertise. They may attend science education seminars and read educational materials, and veterans will see multiple science-related cases over their long careers. All of this experience, however, creates a dangerous psychological trap, for it promotes dilettantism. Armed with basic but surface-level scientific knowledge, the dilettante knows too much to defer to others, yet knows too little to make sound decisions.⁴⁹

Lawyers (and indeed some would say, law professors especially) seem to be prone to dilettantism, perhaps because in working on cases or making arguments we are exposed to many specialized fields and need to quickly learn and internalize new bodies of knowledge. But being a smart person capable of acquiring surface-level fluency in a field leaves one far from actual expertise, and the failure to distinguish the difference can lead to head-scratching behavior. Take for example *Rosen v. Ciba-Geigy Corp.*,⁵⁰ in which the U.S. Court of Appeals for the Seventh Circuit affirmed the district court's exclusion of expert testimony linking the defendant's nicotine patch with the plaintiff's heart attack for "lack[ing] scientific rigor."⁵¹ From the standpoint of *Daubert*, this outcome is entirely unremarkable, but consider the characters in this tale. The expert was Dr. Harry Fozzard, a distinguished professor of medicine and former chief of cardiology at the University of Chicago, as well as a former editor-in-chief of the journal *Circulation Research*.⁵² The author of the opinion was Chief Judge Richard Posner, former professor of law at the University of Chicago and a founder of the law and economics movement. Judge Posner's legal acumen is unquestioned, but the very idea of a law professor assessing and correcting the opinions of a medical professor on a *medical* issue is utterly bizarre.⁵³ After all, would we ever have Dr. Fozzard assess

49. Tom Nichols, for example, observes that in the vaccine context, it is not the uneducated who go astray, but rather the people who "are educated just enough to believe they have the background to challenge established medical science." TOM NICHOLS, *THE DEATH OF EXPERTISE: THE CAMPAIGN AGAINST ESTABLISHED KNOWLEDGE AND WHY IT MATTERS* 21 (2017); cf. COLLINS, *supra* note 26, at 118 (arguing that laypersons with primary source knowledge are "dangerous" because they do not actually have expertise, but they think they do).

50. 78 F.3d 316 (7th Cir. 1996).

51. *Id.* at 319.

52. *Id.* at 318; Timothy J. Kamp & Craig T. January, *Harry A. Fozzard, MD: 1931-2014*, 116 *CIRCULATION RSCH.* 552, 552-53 (2015).

53. Among other things, Judge Posner criticized Dr. Fozzard's failure to account for alternative causal theories and his reliance on animal studies to understand the effects of nicotine. The opinion also effectively made its own scientific conclusions: "Wearing a nicotine patch for three

whether Judge Posner correctly applied the requirements of proximate cause?

Jury decisionmaking fares no better. Jurors who have some tangential knowledge or who are quick studies and readily absorb the scientific material will be prone to overconfidence. They are likely to join the judges in engaging in dilettante decisionmaking. The remaining jurors are left to their own devices in assessing the warring experts. Lacking expertise, they must rely on proxies or other measures of reliability beyond the substantive content of the expert testimony, skills called “external meta-expertise” in the sociological literature.⁵⁴

External meta-expertise basically consists of the everyday expertise that people use to distinguish liars.⁵⁵ In some sense, resorting to these skills and techniques is both understandable and promising. Devoid of other options, jurors naturally fall back on techniques that they both know and are comparatively competent in. The problem, however, is that those everyday techniques do not transfer well to the expert context, which is why jurors are mocked for focusing on an expert’s tie or appearance. Everyday cues and stereotypes, perhaps half-useful (and even then deplored) in assessing the honesty of a salesperson or the danger presented by the person lurking at a street corner, have even less probative value in assessing expert testimony. Experts, after all, are carefully selected by litigants for their presentability, and the reliability of expert testimony depends on the message, not the messenger.⁵⁶

The situation improves little even if jurors moved beyond superficial appearances to more substantive external measures. For example, suppose jurors focused on the testimony’s clarity and accessibility.⁵⁷ Why should a nonexpert’s ability to understand an expert conclusion be correlated at all with the conclusion’s reliability?⁵⁸ As the philosopher J.D. Trout has argued, the “goodness” of an

days, like smoking for three days, is not going to have a significant long-run effect on coronary artery disease; that much is clear.” *Rosen*, 78 F.3d at 319.

54. COLLINS & EVANS, *supra* note 26, at 45, 51 (discussing external meta-expertise).

55. COLLINS, *supra* note 26, at 76–79.

56. To be sure, some studies suggest that “both the messenger and the message are important for a decision about the credibility of an expert witness.” Ivković & Hans, *supra* note 29, at 458. The point, however, is even this does not help the jury. Assessing the messenger is an unreliable way to determine the accuracy of the message, while the jury is incompetent to assess the message directly.

57. *Id.* at 479 (discussing “importance of clarity and accessibility”); DAVID H. FREEDMAN, WRONG: WHY EXPERTS* KEEP FAILING US—AND HOW TO KNOW WHEN NOT TO TRUST THEM 76–80 (2010).

58. See TROUT, *supra* note 35, at 62 (questioning why we rely so much on our understanding, when “[o]ur finite minds turn to simple rules to process the myriad things we hope to understand”).

explanation depends on its accuracy, not our ability to understand it.⁵⁹ Indeed, this quest for clarity may in fact hamper jurors in their decisionmaking. Studies show that nonexperts prefer not only good explanations, but also confident and seemingly certain ones, even if they contain false details.⁶⁰ By contrast, while experts also prefer good explanations, they are appropriately more skeptical and less confident.⁶¹

A natural response to these complaints about judicial dilettantism or jury reliance on proxies is resignation. What more can we possibly expect judges and juries to do? Under the current structure, judges and juries seem to be doing their best given the impossible task presented to them. But the key word here is current. There is nothing inherent about the *Daubert* structure, and it is the structure that deserves criticism, not the actors working within it.⁶²

Suboptimal decisionmaking is the chief vice of the *Daubert* framework. (After all, accuracy is the framework's *raison d'être*.) But *Daubert* has sowed other pathologies in the legal system, as developed below.

1. Extralegal or Norm-Violating Behavior

By tasking lay decisionmakers with near impossible tasks, the *Daubert* framework has encouraged them to seek workarounds, including ones that are extralegal or violate modern legal norms. In a sense, the pressure placed by the legal system ultimately seeks a weak point for its release. Faced with warring experts and desperate for some tie-breaking information, jurors end up searching the internet, in violation of the rules against extraneous prejudicial information.⁶³ Similarly, some judges conduct independent judicial research, departing from adversarial system norms or even rules against *ex parte* communication.⁶⁴ These judges justify their departures as necessary for accurate decisionmaking, and they are right. But the practice clearly

59. *Id.* at 131. Trout argues that we need to look to “mature science we know to be accurate, not intuitions regarding what we think is true.” *Id.* at 198. This approach is precisely the one I take in this paper.

60. *Id.* at 40–41 (reporting on neurobabble experiments of Dean Skolnick Weisberg); FREEDMAN, *supra* note 57, at 68–69 (suggesting that nonexperts gravitate to the expert expressing greater certainty).

61. TROUT, *supra* note 35, at 40–41.

62. As Sam Gross notes in his seminal piece on expert evidence, “it is not true that whatever a judge or jury does with expert evidence is as good as what anybody else could do.” Gross, *supra* note 8, at 1181.

63. See FED. R. EVID. 606.

64. Edward K. Cheng, *Independent Judicial Research in the Daubert Age*, 56 DUKE L.J. 1263, 1275, 1278 (2007).

runs counter to party-driven litigation norms, and its rare, inconsistent, and reluctant use harms uniformity.

Use of court-appointed experts or technical advisors, whether actual or proposed, represents another departure from adversarial norms caused by the *Daubert* framework. One natural way to avoid dilettante decisionmaking is to have an expert decide, which is precisely what these mechanisms do. Another related response is for judges to informally specialize,⁶⁵ or for courts to use specialist judges,⁶⁶ but these practices or proposals run afoul of deep-seated norms about generalist judges (and juries).

A further way of relieving the pressures imposed by impractical doctrines or policies is for actual practice to simply diverge from them. Examples abound from everyday life in which overly stringent regulations are enforced with a light touch, or inane corporate policies are flouted, circumvented, or complied with in name only.⁶⁷ So too with *Daubert*, where not only is the gatekeeping task difficult for judges, but applying the *Daubert* factors makes little sense in many applied science contexts. In these contexts, with little choice, judges engage in what is better characterized as an intuitive “hard look” test than an analytical application of formal standards.⁶⁸

Perhaps the final release valve to the *Daubert* pressure is abdication. In a number of high-profile cases, judges have thrown up their hands, receiving appellate court ire in return.⁶⁹ But rather than scornfully viewing these instances as the result of laziness, perhaps we should view them as refreshingly honest and humble. That a court

65. Edward K. Cheng, *The Myth of the Generalist Judge*, 61 STAN. L. REV. 519, 554 (2008).

66. See James R. Dillon, *Expertise on Trial*, 19 COLUM. SCI. & TECH. L. REV. 247, 296–99 (2018).

67. For example, consider unrealistic speed limits, or when store clerks use a “house” frequent-shopper card to help hapless patrons without them.

68. 5 FAIGMAN ET AL., *supra* note 12, § 41:10.

69. For example, as the trial court stated in *McClain v. Metabolife International, Inc.*:

Trying to cope in this case without a pharmacological, or a medical, or a chemical, or a scientific background, the court cannot fully and fairly appreciate and evaluate the methodology employed by either of these witnesses as they reached the conclusions they reached, conclusions that a jury could not reach without some expert opinion testimony. Neither can the court fully appreciate or evaluate the criticisms made by defendant of the proposed testimony of these witnesses, especially when the criticisms do not come from competing proposed experts. This court does not pretend to know enough to formulate a logical basis for a preclusionary order that would necessarily find, as a matter of law, that these witnesses cannot express to a jury the opinions they articulated to the court.

401 F.3d 1233, 1238 n.3 (11th Cir. 2005). See also *Est. of Barabin v. AstenJohnson, Inc.*, 740 F.3d 457, 464 (9th Cir. 2014) (stating that the district court failed multiple times to act as a gatekeeper for expert testimony).

“cannot fully and fairly appreciate and evaluate the methodology employed” by the experts we should have little doubt.⁷⁰

2. Overly Simplistic Rules

Despite the fact that checklists really cannot capture the process of scientific judgment, the pressures of the *Daubert* framework have encouraged courts to develop dubious proxies for good science. These proxies may make the gatekeeping task feasible for lay judges, but they oversimplify science at considerable cost to accuracy. For example, one common mistake is to equate statistical significance—traditionally, a p-value of 0.05—with evidentiary reliability. While historically used as a rule of thumb, statisticians have now concluded that using the 0.05 threshold is more distortive than helpful.⁷¹ The evidentiary weight due to a scientific study involves many other factors beyond p-value, including statistical power, effect size, and data quality, yet p-value has become almost a magical line in law circles. In addition, even if a 0.05 p-value were an appropriate metric for scientific proof, it does not at all square easily with legal standards of proof.⁷²

Other questionable proxies have also arisen as judges have sought certainty and bright-line rules where none exist. Some courts have required a relative risk of 2.0 in toxic tort cases, requiring a doubling of the population risk before considering causation.⁷³ But the preponderance standard does not require that the substance more likely than not caused *any* case of the disease in the population, it requires that the substance more likely than not caused the *plaintiff's* case. Other courts have required epidemiological (human) studies in order to prove causation, even though the entire field of toxicology uses tissue and animal studies to make inferences, often in combination with and especially in the absence of epidemiology.⁷⁴

An even more insidious simplification has been the atomization of scientific evidence. Perhaps because the above proxies and the

70. *McClain*, 401 F.3d at 1238 n.3.

71. Ronald L. Wasserstein & Nicole A. Lazar, *The ASA Statement on p-Values: Context, Process, and Purpose*, 70 AM. STATISTICIAN 129, 131 (2016).

72. See generally Michelle M. Burtis, Jonah B. Gelbach & Bruce H. Kobayashi, *Error Costs, Legal Standards of Proof, and Statistical Significance*, 25 SUP. CT. ECON. REV. 1, 2–5 (2017) (discussing the problematic relationship between statistical significance and legal burdens of proof).

73. Lucinda M. Finley, *Guarding the Gate to the Courthouse: How Trial Judges Are Using Their Evidentiary Screening Role to Remake Tort Causation Rules*, 49 DEPAUL L. REV. 335, 348–49 (2000) (discussing an emerging rule requiring epidemiology with greater than double the risk).

74. *Id.* at 361–62 (recounting neutral expert in *Hall v. Baxter Healthcare Corp.*, 947 F. Supp. 1387, 1449 (D. Or. 1996), who testified that when epidemiology is not clear, toxicology is appropriate to consider).

Daubert standard itself are most easily applied to individual studies, some courts have taken a study-by-study approach to reliability and have refused to allow experts to consider the scientific literature holistically.⁷⁵ This atomized approach reflects a common mistake made by lay consumers of science, which is to overly emphasize single studies and their conclusions. The mere fact that one study finds a link does not mean the link is established, just as uncertainties or weaknesses in a study do not render it invalid.⁷⁶

Many of these simplifications ultimately harm plaintiffs more than defendants, and so critics have often argued they are ideological in origin, as discussed below. That may partially be the case. But one should also not forget the powerful influence that structure has on behavior. *Daubert* gatekeeping places lay judges in an epistemically difficult position. That they would then develop simplifying doctrines—however ill-advised or one-sided—is practically inevitable.

3. Politicization

Worst yet, many of the pathologies discussed invite what the law frequently seeks to avoid most of all—politicization. If checklists do not work and judges are forced to rely on intuition, then those intuitive judgments will reflect the inherent biases we all have. If judges can choose to use (or not use) a multitude of flawed simplifying rules, that choice enables them to consciously or unconsciously reach their desired admissibility result. And if juries are epistemically incompetent and given no effective guidance on how to decide an expert issue, then they will be prey to emotional or deep-pocket arguments.

The empirical literature and the case law hint that this politicization is real. Eric Helland's recent study suggests that a judge's demographic and political background has a significant effect on *Daubert* decisions.⁷⁷ Legal realism of course is not new, but the legal realist charge is normally primarily aimed at appellate lawmaking. To

75. Margaret A. Berger, *The Admissibility of Expert Testimony*, in FED. JUD. CTR., REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 11, 23 (3d ed. 2011) (reporting that some courts are atomistic, while others are not); see also *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 153 (1997) (Stevens, J., concurring in part and dissenting in part) (“It is not intrinsically ‘unscientific’ for experienced professionals to arrive at a conclusion by weighing all available scientific evidence . . .”).

76. Cf. Elisabeth A. Lloyd, *Confirmation and Robustness of Climate Models*, 77 PHIL. SCI. 971, 973 (2010) (noting that while it is true that climate models have some inaccuracies and uncertainties, “it is generally untrue that the global models cannot represent present or past global climate”).

77. Eric Helland, *The Role of Ideology in Judicial Evaluations of Experts*, 62 J.L. & ECON. 579, 609 (2019).

see strikingly legal realist results at the *trial level*—the place where the rule of law has long been thought to operate most strongly—is telling.

The sharp difference in judicial scrutiny of expert evidence in civil versus criminal cases similarly points to politicization. Stricter admissibility standards are generally thought beneficial to both criminal and civil defendants. Yet the strictness of *Daubert* in the civil context (thereby helping corporate defendants) is matched only by the laxness of its application in the criminal (thereby helping prosecutors). In some states, this political choice is openly made by the legislature (as in Georgia),⁷⁸ but elsewhere, Rule 702 and *Daubert* are textually trans-substantive, leading to outcries of discriminatory application.⁷⁹

D. *The Roots of the Daubert Mistake*

How did the legal system end up in this mess? As it turns out, the *Daubert* framework may be an epistemic mistake, but in many ways, it is an understandable one. Structurally and culturally, *Daubert* was a natural fit for solving the problem of junk science in the court room. *Daubert* was in a sense too tempting for the American legal system to avoid.

1. The Structure of Evidence Law

Two things lie at the core of the American process of legal proof. One is the focus on admissibility; the other is the obsession with oral witnesses. The *Daubert* framework is a symptom of both.

American evidence law consists primarily of admissibility rules, rules applied by a judge to limit the evidence heard by the jury.⁸⁰ The judge screens the evidence, after which the jury is left largely unbridled. One can certainly imagine alternatives—for example, more frequent

78. Compare GA. CODE ANN. § 24-7-707 (2021) (stating that expert evidence in a criminal case “shall always be admissible”), with GA. CODE ANN. § 24-7-702 (2021) (adopting for civil cases a framework almost identical to Rule 702 and referencing *Daubert* by name).

79. Valena E. Beety & Jennifer D. Oliva, *Evidence on Fire*, 97 N.C. L. REV. 483, 489–90 (2019).

80. Historically, the reasons given for this structure include a mix of adversarial values, the use of witnesses, and a distrust of the jury. Edmund M. Morgan, *The Jury and the Exclusionary Rules of Evidence*, 4 U. CHI. L. REV. 247, 258 (1937); see also JAMES BRADLEY THAYER, A PRELIMINARY TREATISE ON EVIDENCE AT THE COMMON LAW 2 (Bos., Little, Brown & Co. 1898) (“It is this institution of the jury which accounts for the common-law system of evidence . . .”). Note, however, that in modern practice, admissibility rules also govern bench trials, despite the rules’ origins in jury distrust. 1 CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, FEDERAL EVIDENCE § 1:3 (4th ed. 2020). Compare *In re Unisys Sav. Plan Litig.*, 173 F.3d 145, 164 (3d Cir. 1999) (Becker, C.J., dissenting) (“The Federal Rules of Evidence apply with full force to bench trials.”), with *Null v. Wainwright*, 508 F.2d 340, 344 (5th Cir. 1975) (“Strict evidentiary rules of admissibility are generally relaxed in bench trials, as appellate courts assume that trial judges rely upon properly admitted and relevant evidence.”).

judicial comment on the evidence,⁸¹ rules governing inference, or more rigorous sufficiency standards—but we have chosen to control the jury using admissibility. *Daubert* is the offspring of this structure. Just as judges filter out questionable evidence like hearsay, character, and emotionally charged photographs, *Daubert* asks judges to filter out junk science. But the fundamental problem is not simply bad evidence. The difficulty is that judges and juries are not qualified to make expert determinations, so both the gatekeeping and the subsequent factfinding are fraught.

American trial practice also centers on live witnesses, perhaps pathologically so.⁸² Nearly all evidence enters the trial process through a witness's testimony, even when that witness acts as a mere conduit.⁸³ Consequently, the legal system focuses on the expert witnesses offered by the parties, rather than the body of knowledge or the scientific community that underlies them. The battle of experts and its associated problems come from allowing the individual experts to take center stage. Since the parties choose from among a nearly limitless pool of experts, they can always provide the misimpression of parity even when none actually exists.⁸⁴

2. The Death of Expertise

A cultural explanation for the *Daubert* framework is what Tom Nichols has termed the “death of expertise” in broader American society.⁸⁵ This phenomenon is the popular belief that laypersons can make perfectly well-informed decisions on expert topics.⁸⁶ In modern times, it is perhaps driven by the democratization of information through the internet, but it also has deep historical roots in a populist distrust of experts.⁸⁷

Commentators attribute the death of expertise to a variety of related cultural beliefs. One thread exalts the independent thinker, believing that “knowledge that is developed by the knower

81. JOHN H. WIGMORE, A STUDENTS' TEXTBOOK OF THE LAW OF EVIDENCE 4–5 (1935) (describing how the primary means for guiding jury decisionmaking evolved from judicial comment to admissibility).

82. See generally Edward K. Cheng & G. Alexander Nunn, *Beyond the Witness: Bringing a Process Perspective to Modern Evidence Law*, 97 TEX. L. REV. 1077 (2019).

83. *Id.* at 1099–1104.

84. Gross, *supra* note 8, at 1125–28 (discussing adversarial bias problems).

85. NICHOLS, *supra* note 49, at 3–4.

86. *Id.* at 5–6.

87. *Id.* at 6.

herself/himself is better than knowledge that comes from the outside.”⁸⁸ The ideal decisionmaker therefore listens to and understands the experts, and then synthesizes an independent answer.⁸⁹ Another thread opposes experts as exercising nondemocratic authority.⁹⁰ Under this theory, there are no actual experts—experts are simply elites in the position of being called experts.⁹¹ Finally, Nichols himself argues that the death of expertise has its origins in a kind of narcissism, an attempt to recapture the self-reliance celebrated by Locke⁹² and Tocqueville.⁹³ As historian Richard Hofstadter once illustrated, a modern American wakes up and neither knows how his kitchen appliances work nor has the competency to judge the issues in the morning paper.⁹⁴ That feeling of helplessness generates anger and resentment against elites.⁹⁵

Whatever the cause, this death of expertise has opened up considerable gaps in attitudes between the lay public and the scientific establishment on scientific issues.⁹⁶ It also fuels a belief that lay juries (and lay judges, who ironically are a different kind of elite) can and should assess scientific issues themselves. But as I will argue at greater length below, my critique of the *Daubert* framework is not about “elites” versus average citizens.⁹⁷ Rather, it is the more basic observation that

88. Rainer Bromme, Dorothe Kienhues & Torsten Porsch, *Who Knows What and Who Can We Believe? Epistemological Beliefs Are Beliefs About Knowledge (Mostly) to Be Attained from Others*, in PERSONAL EPISTEMOLOGY IN THE CLASSROOM 163, 168 (Lisa D. Bendixen & Florian C. Feucht eds., 2010).

89. *Id.* at 168–71 (describing the conventional ideal of the independent thinker); COLLINS & EVANS, *supra* note 26, at 5–6 (describing the folk wisdom that we do not need experts, rather just good thinking).

90. WALTON, *supra* note 19, at 1–2; see also Stephen P. Stich & Richard E. Nisbett, *Justification and the Psychology of Human Reasoning*, 47 PHIL. SCI. 188, 201 (1980) (“The cognitive rebel is, in effect, proclaiming that the reflective equilibrium of socially designated authorities doesn’t count, and that his own reflective equilibrium is, for the matter at hand, to be preferred.”).

91. COLLINS, *supra* note 26, at 50.

92. See, e.g., JOHN LOCKE, AN ESSAY CONCERNING HUMAN UNDERSTANDING 71 (Batoche Books Ltd. 2001) (1690) (“[P]erhaps we should make greater progress in the discovery of rational and contemplative knowledge, if we sought it in the fountain, in the consideration of things themselves; and made use rather of our own thoughts than other men’s to find it.”).

93. NICHOLS, *supra* note 49, at 4, 16–17.

94. *Id.* at 18 (quoting RICHARD HOFSTADTER, ANTI-INTELLECTUALISM IN AMERICAN LIFE 34 (1963)).

95. *Id.*

96. CARY FUNK, LEE RAINIE, AARON SMITH, KENNETH OLMSTEAD, MAEVE DUGGAN & DANA PAGE, PEW RSCH. CTR., PUBLIC AND SCIENTISTS’ VIEWS ON SCIENCE AND SOCIETY 6 (Jan. 2015) (reporting a fifty-one point difference between general public and scientists on the safety of genetically modified foods, a thirty-three point gap on evolution, and a thirty-seven point gap on human-caused climate change).

97. My argument is also emphatically not that the average person cannot become sufficiently educated over time about an area to make a contribution, or that only special people with fancy degrees can become experts. See COLLINS, *supra* note 26, at 42–43 (reporting that lay activists contributed to AIDS research, but only after they acquired enough knowledge about clinical trials).

we are *all* laypersons, at least most of the time.⁹⁸ Hofstadter's observation is right: the modern world is too complicated for the Renaissance-man ideal. Reality belies all of these romantic notions of lay decisionmaking. Experts undergo extensive training to understand the nuances of their fields, and experts simply have skills and knowledges that nonexperts do not have. People trained to speak German, design machinery, or perform complex mathematical calculations can do so; laypersons cannot.⁹⁹

3. Overconfidence of Legal Actors and the Idealization of Science

A final explanation—a more particularized version of the death of expertise—is the outsized confidence that lawyers have in themselves. Perhaps it is because lawyers must routinely absorb and handle diverse sets of material. Perhaps it is because legal argument requires and trains us to argue even in the absence of subject matter expertise. Perhaps it is because the legal profession attracts a certain level of intelligence with an accompanying arrogance. Lawyers think both that they are quick studies and that their independent nonexpert conclusions are correct.¹⁰⁰ (Indeed, on this score, law professors are perhaps the worst offenders of all.) No wonder then that lawyers would create the *Daubert* framework, in which the reliability of science, an area completely outside our expertise, is debated and determined by lawyers. The jury still ultimately decides, a concession to democratic traditions, but only after the lawyers (including the judge) have made things safe.

This overconfidence in lawyers is made still worse by two other tendencies. The first is the idealization of science, harkening back to the dilettante problem. To the extent that most lawyers have little scientific training, they are apt to idealize and oversimplify the scientific process, and convert it to, for example, *Daubert's* four doctrinal factors.

Rather, the point is that laypersons in a courtroom situation are incompetent to make expert decisions, and they simply do not have time to become experts along the way.

98. Bromme et al., *supra* note 88, at 165 (“Not only children but also adults remain laypersons throughout their whole lifetime with regard to most topics and domains of knowledge available in society.”).

99. MICHAEL POLANYI & HARRY PROSCH, MEANING 184–85 (1975) (noting that the “popular conception of science . . . is a collection of observable facts that anybody can verify for himself,” but that the layperson is more likely to break the scientific equipment than make a single observation); see also COLLINS, *supra* note 26, at 50 (arguing that relational theory—that expertise exists by position alone—is belied by experience).

100. Along similar lines, lawyers who have trouble understanding the material end up blaming the experts instead of recognizing their own limitations. See Transcript of Oral Argument at 40, Gill v. Whitford, 138 S. Ct. 1916 (2017) (No. 16-1161) (recording Chief Justice Roberts referring to the social science data in a voting rights case as “gobbledygook”).

The second is the way that some lawyers view courts almost as a *deus ex machina* for society's most difficult problems. If we ask the Supreme Court to decide the most controversial and difficult moral questions of the day, surely a judge and jury can decide whether a drug causes a disease.

II. THE CONSENSUS APPROACH

Disparaging the current *Daubert* framework, flawed though it is, does not advance the discussion, it only sets the stage. If *Daubert* is not the solution, what is? After all, the expert paradox in a sense suggests that the problem is unsolvable.

As this Part will show, the answer to the expert paradox comes through a two-part realization. The first is a recognition of the constrained nature of legal proof. The second is the understanding that to make educated decisions in this context, we must rely on the expertise of others (though we must exercise care in selecting what merits our deference). The solution is therefore a subtle yet fundamental shift in the questions that we ask the legal system when it comes to facts requiring expertise. The shift avoids the expert paradox, the problem of epistemic competence, and many of the other ills that *Daubert* has wrought.

A. *The Fundamental Question*

We begin with the foundational question: How should a lay person, a nonexpert, make decisions about facts involving expert knowledge like science? This question is undoubtedly a tricky one, for it directly implicates the expert paradox as stated by Anacharsis and Learned Hand. How is a layperson supposed to judge specialized information when the layperson by definition knows nothing about the field?

Incidentally, this question is highly general and extends far beyond the legal context. It applies whenever any layperson interacts with an expert, such as for medical treatment, financial advice, or home repairs.¹⁰¹ It should therefore interest everyone, not just evidence scholars. Regardless, for our purposes, it is the key prior question. Without answering it, we cannot even hope to propose a way for the legal system to handle scientific evidence.

To answer the foundational question, we have to sharpen it by making clear a few assumptions, most of which are implicit in its

101. Gross, *supra* note 8, at 1182.

language. First, we will assume that the goal is accurate decisionmaking. One can imagine other values to optimize—respect for individuals, the opportunity to be heard, risk aversion, etc.—but we will ignore those. The goal is to find the strategy with the highest probability of determining the factual truth.

Second, the question's scope is restricted only to factual determinations. It is not about general decisionmaking, much of which may involve value judgments or other external considerations.¹⁰² Thus, our focus is only on finding an optimal strategy for determining empirical issues such as whether a chemical causes a disease or whether a manufacturer could have known about a causal link given extant data. Issues such as whether the manufacturer acted negligently or should have conducted more testing are beyond the scope of inquiry. These more value-laden questions involving policy trade-offs and morality are assumed to be within the competency of a lay decisionmaker and not areas where experts have specialized knowledge.¹⁰³

Finally, we must remember the context.¹⁰⁴ The foundational question is asked in a heavily time- and resource-constrained environment. This constraint is certainly true in the legal context, where courts must decide cases in finite time, with limited resources, and often based only on the information presented by the parties. But the constraint is also frequently true in everyday decisionmaking. Normally, we cannot wait and see how the scientific evidence develops, nor can we go to medical school or get PhDs to get the knowledge and training necessary to become experts ourselves.¹⁰⁵ This constraint is critical. The legal system is a practical endeavor. Its task is to make the best decision based on the available evidence, not to be an oracle for

102. Cf. John Hardwig, *Epistemic Dependence*, 82 J. PHIL. 335, 336 (1985) (restricting discussion on expertise to propositions for which evidence does actually exist).

103. For example, the question whether to do animal testing has an expert part (whether there are scientific benefits to the practice) and a nonexpert part (whether it is ethical). Ilya Somin, *When Should Voters Defer to the Views of Scientists?*, WASH. POST: VOLOKH CONSPIRACY (Feb. 3, 2015), <https://www.washingtonpost.com/news/volokh-conspiracy/wp/2015/02/03/when-should-voters-defer-to-the-views-of-scientists/> [<https://perma.cc/N9XV-5QZ7>] (“[S]ome seemingly scientific policy issues actually include major nontechnical components on which scientists are not likely to have specialized knowledge.”); see also WALTON, *supra* note 19, at 25 (criticizing when experts wade into areas that they are not supposed to, such as those involving moral judgment).

104. 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, 814 (noting that the field of social epistemology asks, “under the real-world epistemic limits of a particular social process for the acquisition of knowledge, what epistemic norms actually work the best?”).

105. Hand, *supra* note 15, at 55 (“The jury . . . cannot get [the expertise] mediately, because the real acquisition of such experience involves a whole course of reading and practical experiment in the matter in hand, even to understand the terms or the methods of reaching conclusions.”).

absolute truth.¹⁰⁶ Criticizing past decisions based on evidence that did not exist at the time of decision is the worst form of Monday-morning quarterbacking.

Given these constraints, how do we answer the foundational question? As Section I.B. has already enumerated, the wrong answer is for the layperson to make an independent judgment. The layperson is epistemically incompetent to judge the expert opinion substantively and has neither the time nor the resources to gain such expertise. Checklists or other proxies such as clarity of presentation are similarly ineffective. So, we must therefore dispense with the romantic ideal of the independent decisionmaker or the self-reliant thinker.¹⁰⁷ Instead, we need to get comfortable with relying on the expertise and authority of others. Put differently, using the Miller & Allen dichotomy, laypersons need to start embracing deference over education.

If anything, division of labor, specialization, and expertise characterize modern postindustrial societies. At best, a person can master a few subdisciplines, often related to his or her profession or avocation, but no one can be a polymath.¹⁰⁸ The finitude of time, resources, and human capability make it impossible for us to have expertise in all fields.¹⁰⁹ Even without the complexity of modern society, most of our knowledge comes not from direct observation or proof,¹¹⁰ but from the authority of others who know more, and this statement applies

106. Sheila Jasanoff, *Serviceable Truths: Science for Action in Law and Policy*, 93 TEX. L. REV. 1723, 1730 (2015) (arguing that production of “‘good enough’ knowledge has long been a preoccupation of the law in contemporary societies”). The same constraints apply in clinical medicine. As Dr. Greenlick, one of the experts in the silicone breast implant litigation, noted:

Physicians [must] do the best they can in an uncertain situation. They use all of the sources of information at their disposal The scientist has the luxury of reporting that there isn’t yet sufficient data to draw a conclusion. That luxury isn’t available to the clinician, because the decision to do nothing in a clinical situation is selecting a specific course of action.

Finley, *supra* note 73, at 361–62.

107. *See supra* Section I.D.2.

108. Bromme et al., *supra* note 88, at 165 (“[T]o be a true polymath seems impossible in our times . . .”).

109. Dillon, *supra* note 66, at 311.

110. COADY, *supra* note 41, at 32:

Many of the things we take ourselves to know with a very high degree of certainty have not come from drinking “the fountain” of “things themselves,” but rather from our attending to the thoughts and understandings of other men and women, transmitted to us (directly or indirectly) through their testimony;

Hardwig, *supra* note 102, at 335:

The list of things I believe, though I have no evidence for the truth of them, is, if not infinite, virtually endless. . . . Though I can readily imagine what I would have to do to obtain the evidence that would support any one of my beliefs, I cannot imagine being able to do this for *all* of my beliefs. . . . [I]ntellect is too small and life too short.

even to the experts themselves.¹¹¹ As the philosopher C. A. J. Coady writes in his seminal book on testimony:

A lot of recent work in epistemology has emphasized the extent to which we are all (albeit in different ways and to different degrees) epistemically dependent on experts. . . . [W]e are dependent on others, especially experts or those we judge to be experts, for many of the things we believe and many of the things we claim to know[,] . . . and we are becoming more and more reliant on them as our body of knowledge . . . expands[.]¹¹²

Practically speaking then, “[a]n attempt at epistemic self-reliance—even by the experts *within their own fields* of expertise—would be sheer folly.”¹¹³ Deference to authority is not laziness or an abdication of our intellectual responsibility. It is the normatively correct and rational thing to do,¹¹⁴ and laypersons do it all the time to their considerable benefit.¹¹⁵ As Stephen Stich and Richard Nisbett argue:

[I]t is a hallmark of an educated and reflective person that he recognizes, consults and defers to authority on a wide range of topics. . . . Few educated laypersons would consider questioning the consensus of authorities on the authenticity of a painting, the cause of an airline crash, or the validity of a new theorem. . . . The man who persists in believing that his theorem is valid, despite the dissent of leading mathematicians, is a fool. The man who acts on his belief that a treatment, disparaged by medical experts, will cure his child’s leukemia, is worse than a fool.¹¹⁶

111. POLANYI & PROSCH, *supra* note 99, at 185 (“[In addition, scientists themselves] must rely heavily for their facts on the authority they acknowledge their fellow scientists to have.”).

112. COADY, *supra* note 41, at 27–28; C. A. J. COADY, *TESTIMONY: A PHILOSOPHICAL STUDY* 282 (1992) (“Clearly, I cannot determine the matter directly, in the sense of checking for myself on the truth of the information about physics which he gives me, for that would require that I too be an expert physicist.”).

113. John Hardwig, *Toward an Ethics of Expertise*, in *PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY* 83, 85 (Daniel E. Wueste ed., 1994). Tony Ward argues that such strong deference to authority is inappropriate in contexts when “the beliefs adopted from the expert have to be publicly justified,” such as the legal context. Tony Ward, *Expert Testimony, Law and Epistemic Authority*, 34 *J. APPLIED PHIL.* 263, 265 (2017). In a sense, Ward argues that an accurate decision is not enough, but rather that the factfinder must have justified belief in the fact. *Id.* at 266–67. Given the epistemic incompetence of the lay decisionmaker in this context, however, I would argue that accuracy is the best we can do.

114. Hardwig, *supra* note 102, at 343 (“[R]ationality sometimes consists in deferring to epistemic authority . . .”); Stich & Nisbett, *supra* note 90, at 199 (“Deference to authority is not merely the habitual practice of educated people, it is, generally, the right thing to do, from a normative point of view.”).

115. Naomi Oreskes and Erik Conway observe that while we do not trust an expert to select our home (because it is a subjective nonfactual inquiry), we trust title searches. Why? “The short answer is because we don’t have much choice. Someone has to do the title search, and we do not have the expertise to do it ourselves. We trust someone who is trained, licensed, and experienced to do it for us.” ORESKES & CONWAY, *supra* note 9, at 272; WALTON, *supra* note 19, at 24 (“[D]eference to experts is woven into even the homeliest routines of everyday life.” (quoting *THE AUTHORITY OF EXPERTS: STUDIES IN HISTORY AND THEORY* 9 (Thomas L. Haskell ed., 1984))).

116. Stich & Nisbett, *supra* note 90, at 198–99; *see also* COADY, *supra* note 41, at 33 (“Surely most of us would (and should) prefer the predictions of meteorologists to inductions from our own experiences, when trying to work out what tomorrow’s weather will be like.”).

Can the experts be wrong? Of course. The reason why we should listen to the experts is not that they are infallible, but rather that they are more likely to be right than we.¹¹⁷ And given the resource- and time-constrained contexts in which laypersons must make their decisions, deference is not merely optimal—it is the only practical strategy.¹¹⁸ We trust experts all the time, and “for the most part, the trust [in experts] seems to work out.”¹¹⁹

Now, I should be precise about exactly what this deference entails and to whom laypersons should defer. Deference is due neither to any random person claiming to be an expert, nor to someone merely sporting the right credentials. In fact, deference is arguably not due to any individual at all! Individual experts can be incompetent, biased, error prone, or fickle—their personal judgments are not and have never been the source of reliability. Rather, proper deference is to the *community* of experts, all of the people who have spent their careers and considerable talents accumulating knowledge in their field.¹²⁰ If an individual expert is given our deference, it is only because they represent or provide evidence of what their community would say. The source of reliability is not the person, but the community behind him or her. To refer back to the language of Stich & Nisbett, we accept the authenticity of the painting or the validity of a theorem because that is what “the consensus of authorities” has concluded, not because of a single expert’s personal say-so.¹²¹

This deference does not absolve the layperson of all responsibility. Most of the time, the best evidence of the scientific community’s judgment will come from individual experts. The layperson retains the duty to determine when an individual expert is accurately reporting or representing that consensus. This subtle point is worth restating. The layperson uses his judgment not to determine the substantive answer to the scientific question, but rather to determine what the community consensus thinks it is. The perspective shift is critical, for the latter determination involves no expert

117. COLLINS & EVANS, *supra* note 26, at 2.

118. ORESKES & CONWAY, *supra* note 9, at 272 (“So it comes to this: we must trust our scientific experts on matters of science, because there isn’t a workable alternative.”).

119. DANIEL T. WILLINGHAM, WHEN CAN YOU TRUST THE EXPERTS?: HOW TO TELL GOOD SCIENCE FROM BAD IN EDUCATION 178 (2012); NICHOLS, *supra* note 49, at 23 (arguing that experts are more often right than wrong).

120. WALTON, *supra* note 19, at 38 (suggesting that Aristotle’s strategy would be to ask “whatever most of [the experts] or what all of them would choose”).

121. Stich & Nisbett, *supra* note 90, at 198–99.

judgment. The layperson is perfectly competent to perform it, and there is no expert paradox.¹²²

Finally, just as the foundational question is limited to factual questions, so too must the layperson be careful not to defer to experts on policy or value judgments.¹²³ The layperson owes deference to the expert community on factual questions because of its expertise, but its expertise does not extend to moral or ethical questions.¹²⁴ In fact, the layperson retains the civic duty—particularly in her democratic roles as a juror, voter, or participant in public discourse—to exercise independent judgment on value-laden questions.¹²⁵ So, for example, on the issue of human-caused climate change, the scientists determine whether it exists. The citizenry determines whether the costs of preventing it are worth the benefits.

B. *The Consensus Rule in Law*

Operationalizing a deferential approach in the legal system poses a tricky problem. The needed reform is not strictly evidentiary—at least not in the conventional sense of involving a tweak to the admissibility rules. In fact, maybe this is why the legal system has been stuck in a quagmire for so long. A deferential approach demands a more fundamental change to the factfinding process, and depending on one's perspective, an adjustment in the underlying substantive law.

The most direct method to implement this deferential approach is through substantive amendment. For example, in products liability law, plaintiffs currently must show that the product defect caused the plaintiff's harm. Since this causation requirement typically requires scientific knowledge, we could change the substantive requirement to require that the *scientific community* believes that the product defect caused the harm.

122. Walton suggests that this distinction goes back to Plato. WALTON, *supra* note 19 at 37–38 (suggesting that while Plato in *Charmides* argued that the layperson could not assess specialized knowledge, the layperson could assess whether the expert's report was “something that is known to be true, or is accepted in a field of expert knowledge”).

123. *Id.* at 25 (arguing that experts sometimes wade into areas that they are not supposed to, such as moral judgments); see also Larry Lengbeyer, Assoc. Professor of Phil., U.S. Naval Acad., Presentation at the 6th Biennial Conference of the Society for Philosophy of Science in Practice: Defending Limited Non-Deference to Science Experts (June 17, 2016) (offering instances in which nondeference to experts may be appropriate).

124. See, e.g., Susanne M. Schmittat & Pascal Burgmer, *Lay Beliefs in Moral Expertise*, 33 PHIL. PSYCH. 283, 286–88 (2020) (reviewing literature expressing doubts over whether moral expertise exists or can exist).

125. See Jasanoff, *supra* note 106, at 1742 (warning that “a strong scientific consensus may dilute the need to scrutinize scientific claims, but it is not an invitation for the law to abdicate its normative responsibilities”).

Direct substantive amendments, however, are problematic for several reasons. First, simply adding a scientific consensus requirement would place a new and significant burden on plaintiffs, for if no consensus exists, then plaintiffs would lose. Some tort reformers may find this result appealing as a matter of policy, but our goal here is only to solve the expert paradox, not to engage in broader tort reform. To maintain the same balance, we need to require deference to a consensus *if it exists*, not flatly require a consensus.

Second, direct substantive amendments are a rather clumsy, piecemeal approach. Causation in toxic torts is undoubtedly a key area involving scientific evidence, but the expert evidence problem is trans-substantive, and implementing reform one doctrine at a time is tedious and inelegant.

Finally, direct substantive amendments are unavailable for most instances of the expert paradox. Specialized facts are usually part of a broader evidentiary determination; they are rarely explicit elements of a claim. The forensic evidence in a criminal case involves specialized knowledge, but it is only part of the prosecution's proof that the defendant committed the crime. Additionally, a mixed question of law and fact may involve a combination of facts and value judgments, making deference to the scientific community on the entire element inappropriate.

What we would like to have is a broader, trans-substantive reform that only defers to consensus when it exists and relates to a factual issue. One way to achieve this is with a rule of inference, which might look something like:

Rule 702A. If the relevant scientific community believes a fact involving specialized knowledge, then that fact is established accordingly.

If such a provision (which we will label the "Consensus Rule") seems unorthodox, it should. In particular, the Consensus Rule may appear to dangerously infringe on the right to a jury trial, because it seemingly strips the jury of the power to determine scientific facts. Ultimately, I will argue that the inference rule is perfectly valid and indeed shares characteristics with several well-known and well-accepted evidentiary mechanisms. It departs, however, from most evidentiary provisions in use, and it raises some unresolved constitutional issues. We will explore these complexities, advantages, and potential disadvantages below.

Even if instructed, will jurors follow the Consensus Rule? After all, the death of expertise and the American distrust of experts run deep. Despite the cultural issues, one suspects jurors will follow such rules for a number of reasons. First, jurors are performing a specific role

in an otherwise unfamiliar environment. The questions we ask jurors define their role, and they are unlikely to unilaterally redefine or expand that role. Second, the deferential question is simply easier to answer. Given the difficulty of the material and their limited time and resources, juries are highly unlikely to make their task harder than it already is. So even if a juror normally distrusts experts, the juror may obey the Consensus Rule at trial.¹²⁶

What happens if there is no consensus? After all, while expert communities have vast bodies of shared knowledge, there will always be controversial or undeveloped areas.¹²⁷ In these cases, the Consensus Rule leaves the legal system right back where it started, with the jury deciding the expert question. But this outcome should not trouble us. If the expert community is divided, then the legal system cannot do much better than a coin flip anyway. To improve overall accuracy, the legal system might perhaps be wise to develop procedural mechanisms to delay its decisions until the expert community can reach greater agreement,¹²⁸ but under conventional time constraints, little can be done.

Even without a consensus, the situation under the Consensus Rule is still arguably an improvement over the *Daubert* framework. If there are developed schools of thought, the spirit of the Consensus Rule suggests that the jury should only defer to one of those schools, not strike off on its own. (After all, the jury does not have any expertise to develop its own theory.¹²⁹) Only if the issue is entirely undeveloped should the jury truly decide the facts for itself.¹³⁰

C. Differences from Frye

A natural question is how the Consensus Rule differs from the *Frye* standard. *Frye* has similar language, asking about general

126. Cf. N. J. Schweitzer & Michael J. Saks, *The Gatekeeper Effect: The Impact of Judges' Admissibility Decisions on the Persuasiveness of Expert Testimony*, 15 PSYCH. PUB. POL'Y & L. 1, 12 (2009) (observing that mock jurors were less skeptical of expert evidence within the trial context than without, possibly because of the implicit impression of approval given by the court).

127. E.g., *Hall v. Baxter Healthcare Corp.*, 947 F. Supp. 1387, 1448 (D. Or. 1996) (reporting epidemiologist stating that the "different positions [in the case were] the result of different, but legitimate, interpretations"); COLLINS, *supra* note 26, at 36 ("Even in the hardest of sciences, one can find the equivalent of religious schisms.").

128. Edward K. Cheng, *Changing Scientific Evidence*, 88 MINN. L. REV. 315, 340–41 (2003).

129. See Anthony J. Casey & Julia Simon-Kerr, *A Simple Theory of Complex Valuation*, 113 MICH. L. REV. 1175, 1203, 1210 (2015) (making this point in complex valuation cases).

130. In the absence of any expert community view, the question may revert to the jury, but the conventional safeguards remain. For example, if the offered theory has no empirical basis, the judge can exclude it under the conditional relevance rule, because no reasonable juror could find the conditional facts. See FED. R. EVID. 104(b).

acceptance in the relevant expert community.¹³¹ *Frye* also defers to the judgment of experts rather than rely on judicial gatekeeping.¹³² One can thus easily conflate the Consensus Rule with a return to *Frye*, but nothing could be further from the truth. The differences are at times subtle, but they are essential to the Consensus Rule's success in solving the expert paradox and achieving more accurate and epistemically justified decisions. Here is a summary of the major differences, though a full exposition of their advantages is left to Part III.

1. Admissibility Versus Inference Rule

Frye is an admissibility rule. The judge determines what is generally accepted, and then uses that determination to screen expert testimony from the jury's consideration. Under *Frye*, the jury still independently determines the scientific fact. *Frye* can obviously influence the jury's decision, since the jury cannot use evidence that it does not hear, but the jury remains free to disregard admitted expert testimony. The jury also receives no guidance should the judge decide that two warring experts have applied generally accepted techniques. Contrast that structure to the Consensus Rule, in which the jury (not judge) determines what is generally accepted, and then the jury defers to that consensus.

2. Expert Versus Community

Under *Frye*, the focus is on individual expert witnesses, as it conventionally is. The judge may use the community's judgment to ascertain the reliability of the expert and his methods, but upon admission, the source of information used by the jury is the individual expert. Compared to community judgments, individual judgments carry higher risks of bias, random variation, and incompetency.

The Consensus Rule by contrast shifts the focus away from individual experts to the underlying expert community. To be sure, the parties will present individual experts to testify as to what the scientific consensus is, but the focus is on the *community*. Furthermore, if those experts should disagree about the community view, that disagreement is within the jury's epistemic competence to resolve.

131. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923).

132. See *Zimmerman v. Powell*, 684 N.W.2d 1, 7 (Neb. 2004) (“[T]he *Frye* framework relies exclusively on the assessment of the testifying expert's field; the *Daubert* . . . framework relies on the trial court.”); Allen & Miller, *supra* note 20, at 1141 (tying deference with *Frye*).

3. Methods Versus Facts

Although the language of the *Frye* opinion is broader,¹³³ courts have traditionally applied *Frye* primarily to techniques and methods.¹³⁴ Indeed, traditionally, *Frye* was applied only to *novel* scientific techniques in the criminal context. This focus on methods accords with a framework centered on individual experts, for once the expert is reliable, then the testimony is for the jury. The Consensus Rule is not about the reliability of individual experts or their methods. Its focus is on the actual facts—does the expert community think that a certain scientific fact is true?

4. Uncertainty

Frye and the Consensus Rule take fundamentally different stances on uncertainty and scientific disagreement. *Frye* requires general acceptance for admission, meaning that expert evidence is excluded unless the scientific community broadly agrees with it. This position is highly biased in favor of the status quo, making it a favorite among (pro-defense) tort reformers, since a robust *Frye* standard would impose formidable obstacles on plaintiffs.¹³⁵ As one judge has eloquently argued, however, “[s]ociety need not tolerate homicide until there develops a body of medical literature about some particular lethal agent.”¹³⁶

The Consensus Rule handles scientific disagreement more evenhandedly. The rule causes juries to follow the scientific consensus if it exists. A lack of agreement does not end litigation in favor of the defendant. (That result would be justified only if there were a scientific consensus in the defendant’s favor.) A divided expert community just leaves us with the current regime in which the jury is guessing at the answer.

* * *

133. *Frye*, 293 F. at 1014 (requiring that “the thing from which the deduction is made must be sufficiently established to have gained general acceptance”).

134. David E. Bernstein, *Frye, Frye, Again: The Past, Present, and Future of the General Acceptance Test*, 41 JURIMETRICS J. 385, 392–93 (2001) (noting that *Frye* was not applied in a civil case until 1988, and that *Frye* jurisdictions at the time applied the test to methodology and reasoning). *Daubert* made a similar distinction, focusing on methods rather than conclusions, until the Supreme Court thought better of it. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997).

135. See MICHAELS, *supra* note 9, at 170 (“[S]cientific ignorance guarantees legal bliss for corporations. This is not right. This is not justice.”).

136. *Coppolino v. State*, 223 So. 2d 68, 75 (Fla. Dist. Ct. App. 1968) (Mann, J., concurring); see also Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, a Half-Century Later*, 80 COLUM. L. REV. 1197, 1223 n.202 (1980).

Finally, we should also distinguish the Consensus Rule from the *Frye*-centric approach of Peter Huber. Huber, who coined the term “junk science” and was a key motivator of the *Daubert* revolution, refers often to scientific consensus in his writings.¹³⁷ To the extent that his views extol “mainstream scientific consensus,”¹³⁸ they accord with the Consensus Rule. Huber’s project, however, is different than our project here. His chief target is the historical use of expert credentials as the primary check on reliability.¹³⁹ His response is essentially greater gatekeeping: encouraging courts to review scientific studies for soundness,¹⁴⁰ and then trusting judges to screen out junk science.¹⁴¹ His tacit assumption is also that juries will ultimately decide the cases independently with the screened expert evidence. None of those features address the concerns about the epistemic competence of legal actors. Huber also seemingly follows *Frye*’s overly conservative position on controversial or uncertain issues.¹⁴²

III. THE ADVANTAGES OF THE CONSENSUS RULE

Although the Consensus Rule requires some rethinking of the traditional, admissibility-focused structure of evidence law, this Part argues that it offers an elegant solution to the expert paradox. The Consensus Rule solves the epistemic problems of *Daubert*, represents science more accurately, and eliminates the distortions created by the *Daubert* regime.

A. Epistemic Competence

The Consensus Rule is an epistemically superior framework to *Daubert*. As we discussed in Part I, *Daubert* is fundamentally flawed

137. PETER W. HUBER, GALILEO’S REVENGE: JUNK SCIENCE IN THE COURTROOM 194 (1993) (“Science as Consensus”); Allen & Miller, *supra* note 20, at 1142 (characterizing Huber as arguing that scientific consensus is “less fallible”).

138. HUBER, *supra* note 137, at 199–200; *see also* Bernstein, *supra* note 134, at 392 (interpreting Huber as advocating deference to mainstream scientific opinion).

139. HUBER, *supra* note 137, at 199 (arguing that the wisdom of *Frye* was to focus on consensus and away from credentials).

140. *Id.* at 200 (arguing that a new epidemiological study should survive *Frye* because the underlying method is generally accepted).

141. Allen & Miller, *supra* note 20, at 1144.

142. WALTON, *supra* note 19, at 193 (criticizing Huber’s approach as “tilting the balance” excessively in the other direction, leaving “the courts ill-equipped to deal with new technology, or generally with the kinds of cases where the community of scientists disagree”).

because it tasks lay actors with making expert judgments.¹⁴³ That task is entirely at odds with the scholarship on expert decisionmaking. Proposals to educate judges or use court-appointed witnesses really only mask the symptoms because the lay factfinder still lacks the competence to make expert judgments.

The Consensus Rule gets judges and juries out of the business of making substantive scientific judgments. The strategy never asks laypersons to be dilettantes. Instead, nonexperts are asked to discern what the expert community thinks is the right answer.¹⁴⁴ This question is not necessarily a simple one, but it is at least one that lay decisionmakers are competent to determine through testimony and other evidence.

B. A Better Understanding of Science

The Consensus Rule also reflects a more realistic and less caricatured understanding of scientific research. Too often, nonscientists view “science” as some high school science exams unfortunately do—a set of memorized truths that are completely objective and absolutely certain.¹⁴⁵ Those under this delusion often think that if they could just get an unsullied, neutral expert, they could finally have access to that objective knowledge. Or if a scientist could conduct an impeccable study, they would have “the answer.”

All of these notions, including the notion of “junk science” itself, are wild oversimplifications of the scientific process.¹⁴⁶ To be sure, in the extreme, charlatans positing theories lacking any empirical basis are peddling junk. But just because scientists disagree or publish conflicting studies does not mean that some of them are producing “good science” and the others junk.

Daubert encourages courts to adopt these oversimplifications by asking gatekeepers to admit the good and exclude the junk. The

143. MICHAELS, *supra* note 9, at 166 (“[W]hen judges who are acting as *Daubert* gatekeepers declare that isolated studies or particular experts are not reliable, they are making absolute judgments about the quality of the science, a role for which they are not qualified.”).

144. *Cf.* COLLINS & EVANS, *supra* note 26, at 139 (arguing that in the absence of specialized knowledge, a citizen can make scientific judgments only by relying on others with such knowledge).

145. ORESKES & CONWAY, *supra* note 9, at 267–68. As Oreskes and Conway further note:

This view—that science could provide certainty—is an old one, but it was most clearly articulated by the late-nineteenth-century positivists, who held out a dream of “positive” knowledge—in the familiar sense of absolutely, positively true. But if we have learned anything since then, it is that the positivist dream was exactly that: a dream.

Id.

146. See DAVID S. CAUDILL & LEWIS H. LARUE, NO MAGIC WAND: THE IDEALIZATION OF SCIENCE IN THE LAW 61–62 (2006) (criticizing the overuse of the term “junk science”).

Consensus Approach does not. By focusing on what the scientific community thinks, the Consensus Approach searches for scientific knowledge differently in two important ways. It focuses on community rather than individuals, and it values holistic scientific judgment over discrete studies.

1. Community

“[S]cience is a communal practice.”¹⁴⁷ History may exalt and memorialize the heroes who make extraordinary breakthroughs, but the everyday process of scientific knowledge production is communal and institutional.¹⁴⁸ The various processes of education, publication, conferences, and tenure review all point to “a collective process . . . that shape[s] and check[s] individual judgment.”¹⁴⁹ So when the Consensus Rule focuses on the scientific community rather than individual experts, it more faithfully captures the underlying process.

More importantly for the legal system, the focus on community helps a lay factfinder make better decisions.¹⁵⁰ Deferring to the expert community on an empirical question has a greater chance of finding the truth than deferring to any individual expert.¹⁵¹ Individual experts vary in quality and harbor various personal biases. Worse yet, in an adversarial system, the parties are almost guaranteed to choose experts at the extremes, rather than provide a representative sample.¹⁵² Focusing on the community instead aggregates and averages the

147. Stephen P. Norris, *Learning to Live with Scientific Expertise: Toward a Theory of Intellectual Communalism for Guiding Science Teaching*, 79 SCI. EDUC. 201, 201 (1995); COADY, *supra* note 112, at 282–83; *see also* Norris, *supra*, at 203 (crediting Polanyi as “the first to argue that science is a practice conducted by a community of scientists”).

148. ORESKES & CONWAY, *supra* note 9, at 268–69 (noting that, while people equate science with individual scientists like Galileo, science is really about institutions).

149. Leiter, *supra* note 104, at 808 (quoting Heidi Li Feldman, *Science and Uncertainty in Mass Exposure Litigation*, 74 TEX. L. REV. 1, 15 (1995)); Schwartz, *supra* note 44, at 194–95.

150. Norris, *supra* note 147, at 210–11 (“Epistemic authority . . . does not reside within one individual, but, rather, rests with communities of experts.”).

151. Parts of the science studies literature go so far as to suggest that truth provided by science is “what the relevant community of scientists or technical experts deems to be true.” Jasanoff, *supra* note 106, at 1728; *see also* ORESKES & CONWAY, *supra* note 9, at 268 (“[Science] does not provide proof. It only provides the consensus of experts, based on the organized accumulation and scrutiny of evidence.”). But one need not subscribe entirely to this social view to still conclude that the optimal strategy is to follow the community consensus. Assuming an objective truth, what institution has a better chance of finding it than the expert community?

152. David E. Bernstein, *Expert Witnesses, Adversarial Bias, and the (Partial) Failure of the Daubert Revolution*, 93 IOWA L. REV. 451, 453–57 (2008) (discussing the problem of “adversarial bias”); Gross, *supra* note 8, at 1181 (discussing how pre-selection ends up obscuring any consensus among the experts, and how often “many disputes over expert evidence . . . are generated by the legal system itself”).

opinions of many experts.¹⁵³ From a statistical perspective, it estimates the mean or mode of the distribution, rather than sampling from the extremes.

The focus on community also addresses the expert paradox. This occurs because of the change in question. A lay factfinder lacks the expertise to substantively choose between expert positions.¹⁵⁴ A lay factfinder, however, does possess the competency to choose between experts when they are reporting what the scientific community thinks, a factual inquiry that does not require scientific judgment.

2. Holistic Assessment

The *Daubert* framework and its focus on admissibility encourage courts to view scientific evidence atomistically. For example, courts often spend considerable energy trying to determine whether the studies cited by an expert are sufficiently “scientific.”¹⁵⁵ To be sure, the doctrine is supposed to be about the reliability of the expert’s opinion, but in practice, *Daubert* analyses often focus on the individual studies.¹⁵⁶

Rarely will there be a single study that points inexorably to the truth. The goal of the proof process therefore should not be to discover which pieces of evidence are “more scientific” or “better” than the rest. The goal is to reach an accurate conclusion, and that requires a holistic evaluation of the body of evidence holistically, just like in nonscientific factfinding. Setting high bars on individual pieces of evidence just runs the risk of creating false negative errors.

153. One objection is that by looking at a broader community, we do not necessarily ask the “best” experts available. Research has suggested, however, that “a random group of intelligent problem solvers will outperform a group of the best problem solvers.” Lu Hong & Scott E. Page, *Groups of Diverse Problem Solvers Can Outperform Groups of High-Ability Problem Solvers*, 101 PROC. NAT’L ACAD. SCIS. 16385, 16389 (2004).

154. Allen & Miller, *supra* note 20, at 1144 (“If jurors cannot comprehend the relevant material, neither, one would think, would they be able to decide intelligently to which expert to defer.”).

155. *But see* Schwartz, *supra* note 44, at 196 (arguing that there is no “extra-scientific standpoint” from which judges can assess evidence, so the only reasonable way to determine what is “scientific” is by looking at community acceptance).

156. *See, e.g.*, BEECHER-MONAS, *supra* note 43, at 49 (discussing the importance of “[a]ssessing the cumulative force of all the available information”). In context, the atomistic view makes some sense. Since *Daubert* assumes an educative model in which lay factfinders make the substantive decisions, all that judges need to do is ensure that reliable pieces of evidence reach the jury. Yet, once we understand that lay factfinders cannot competently make expert decisions, atomized presentations become problematic. Factfinders cannot defer to atomized pieces of evidence; they need holistic assessments to which to defer.

Besides, atomistic evaluation is just “not the way scientists operate.”¹⁵⁷ As Justice Stevens recognized in his concurrence to *General Electric Co. v. Joiner*, scientists commonly take a holistic view of evidence.¹⁵⁸ They review all of the available evidence, weighting studies less depending on quality and other characteristics. They even take into account prior knowledge about the world, so that everything is viewed in context.¹⁵⁹ Toxicology evidence like an animal study is not reliable or unreliable; it depends on context. When the epidemiological evidence is clear, scientists perhaps do not consider animal studies. But when the epidemiology is not clear, toxicology is appropriate to consider.¹⁶⁰ The *Daubert* framework, however, has often had trouble with these kinds of contextual judgments.¹⁶¹

A few courts have realized that scientific evidence should be holistically evaluated and have allowed experts to testify based on a “weight-of-the-evidence” methodology.¹⁶² Detractors argue that such a method is too subjective and may be susceptible to expert overconfidence and overreaching,¹⁶³ and in a sense they are right. The solution is not, however, a return to atomistic evaluation as the detractors suggest. Subjective assessments are not inherently

157. MICHAELS, *supra* note 9, at 166.

158. 522 U.S. 136, 153 (1997) (Stevens, J., concurring in part and dissenting in part) (“It is not intrinsically ‘unscientific’ for experienced professionals to arrive at a conclusion by weighing all available scientific evidence . . .”). As David Michaels further argues:

[W]hen judges who are acting as *Daubert* gatekeepers declare that isolated studies or particular experts are not reliable, they are making absolute judgments about the quality of the science, a role for which they are not qualified. It also conflicts with the nature of the scientific enterprise, which necessarily deals with “the weight of the evidence,” not the “reliability” of this or that piece of the whole.

MICHAELS, *supra* note 9, at 166.

159. POLANYI & PROSCH, *supra* note 99, at 186 (noting instances in which scientists could find no immediate fault with a study, but yet “did not believe its results [and] did not even think it worthwhile to consider what was wrong with it”).

160. Finley, *supra* note 73, at 354.

161. Commentators have noted that outcomes in scientific evidence cases have a tendency in practice to track this “weight of the evidence” or “best science available” approach. *See id.* at 351 (noting that the exclusion of evidence in the Bendectin and silicone breast implant cases “may be justified” because the epidemiology matured during the litigation and a consensus developed against the plaintiffs’ claims); *see also* David L. Faigman, David H. Kaye, Michael J. Saks & Joseph Sanders, *How Good Is Good Enough: Expert Evidence Under Daubert and Kumho*, 50 CASE W. RES. L. REV. 645, 654–55 (2000) (endorsing a “better evidence principle” for certain types of expert evidence).

162. *Milward v. Acuity Specialty Prods. Grp., Inc.*, 639 F.3d 11, 26 (1st Cir. 2011) (reversing district court’s exclusion of expert’s use of a weight-of-the-evidence methodology); *see also* Berger, *supra* note 75, at 23–24 (noting split in courts between a holistic and atomistic approach).

163. Lawrence A. Kogan, *Weight of the Evidence: A Lower Expert Evidence Standard Metastasizes in Federal Courts* 2, 32–33 (Wash. Legal Found. Critical Legal Issues Working Paper Series, Working Paper No. 215, 2020), <https://www.wlf.org/wp-content/uploads/2020/02/Kogan-full-March-2020-WP.pdf> [<https://perma.cc/N5K7-QE8V>].

problematic.¹⁶⁴ They only become so when the *Daubert* framework focuses on individual experts chosen by the parties and asks them to make their own judgments. If, as we do under the Consensus Rule, we focused on the scientific community's judgment in aggregate, those adversarial pressures would be far less concerning.

3. Realistic Treatment of Nonscientific Expertise

The Consensus Rule is also a realistic way of treating nonscientific expertise. Fields like art authentication create a conundrum for the *Daubert* framework. Beyond the usual expert paradox problem, some fields are largely immune to checklists or empirical testing requirements. For example, if one party claims a newly found painting is a Jackson Pollock, and the opposing party denies it, how do we guarantee expert reliability?¹⁶⁵ Jackson Pollock experts will know his entire corpus, so one cannot do blind proficiency testing. And while there are objective factors that art authentication experts use, the ultimate determination is a holistic assessment—one that is (appropriately) more art than science.

So what is the legal system to do? The answer is surely not to exclude these art experts for being insufficiently empirically based. The best people to decide the authenticity of a Jackson Pollock are (almost by definition) Jackson Pollock experts. And as the Consensus Rule suggests, the best strategy for authenticating the painting is to ask the community of Jackson Pollock experts—not to ask an individual expert for her opinion and certainly not to have the jury decide for itself.

C. Fixing the Structural Evils of Daubert

The Consensus Rule and its accompanying framework fixes many of the structural distortions created by the *Daubert* regime. Because gatekeeping involves an admissibility rule, the Supreme Court in *General Electric Co. v. Joiner*¹⁶⁶ held that appellate courts review trial court *Daubert* decisions only for abuse of discretion. This deferential standard of review coheres with the rest of the rules of evidence, but as many commentators have noted, it transfers significant decisionmaking power to trial judges.

164. In fact, subjectivity is arguably an unavoidable part of scientific judgment. If one could combine scientific evidence with an objective formula, we would not need the experts in the first place.

165. See WHO THE #\$\$% IS JACKSON POLLOCK? (Picturehouse 2006) (recounting an authentication dispute over an alleged Jackson Pollock painting).

166. 522 U.S. 136, 139 (1997).

Consider why *Daubert* makes trial judges unusually powerful, especially in civil cases with scientific evidence at their core. Ordinarily, the sufficiency standard ensures that trial judges can only take factfinding away from the jury in extreme cases—when no reasonable jury could find otherwise. Further, when trial courts render judgments as a matter of law, appellate courts engage in de novo review, with no deference to the trial judge. But in expert evidence cases, *Daubert* gatekeeping disrupts this conventional system of checks and balances. If a trial judge determines that a party's experts have insufficient scientific reliability, she can exclude them under *Daubert*. This *Daubert* ruling, however, is made under Rule 104(a)'s preponderance standard, not under sufficiency's more stringent no-reasonable-jury standard. With the experts excluded, however, the ensuing sufficiency inquiry becomes a nullity. Without the expert evidence, no reasonable jury can possibly find for the plaintiff, and so summary judgment follows. *Daubert* has thus in effect transferred power from the jury to the trial judge in scientific cases. Whereas in ordinary cases judges need to meet the no-reasonable-jury standard to intervene, in scientific cases they merely need to meet a preponderance standard.¹⁶⁷

The appellate review standard exacerbates the problem. Under *Joiner*, the appellate court reviews the trial court's *Daubert* decision only for abuse of discretion. The appellate court, as always, reviews the sufficiency decision de novo, but since the *Daubert* ruling has already excluded the expert evidence, the sufficiency inquiry is again a nullity. So not only has the *Daubert* framework transferred power from the jury to the trial judge, it has insulated the trial court's decision from appellate review.

The Consensus Rule avoids these structural distortions and maintains a more conventional division of power. The jury remains empowered to determine the position of the expert community. The trial court polices this decision under ordinary sufficiency standards. If no reasonable jury could conclude that the expert community does not believe a fact involving specialized knowledge, then the trial court can find that fact as a matter of law. The trial court's decision on this matter is then reviewed de novo by the appellate court.

Uniformity in decisionmaking is also promoted by the Consensus Rule. If the consensus is obvious on a general fact, an appellate court can step in and decide that factual question as a matter of law. That precedent can then serve to make future handling of the

167. Berger, *supra* note 75, at 20–21 (noting that *Joiner* has the effect of fusing admissibility and sufficiency into a single abuse-of-discretion standard).

scientific question more efficient.¹⁶⁸ After all, either a chemical is carcinogenic or not, so if there is a clear consensus on the answer, the courts within a jurisdiction should be uniform in their conclusion.

D. Maintaining Adversarialism

Finally, while the Consensus Rule is radical in some ways, it is able to solve the expert paradox problem while preserving adversarial legal values. Unlike solutions like court-appointed experts or technical advisors,¹⁶⁹ the Consensus Rule remains a party-driven process. Judges do not suddenly need to find and appoint neutral experts or take on other active roles.¹⁷⁰ The parties continue to hire and present their own experts, providing their attorneys with familiar tasks and the feeling of control. The only difference is the change in the question asked. The *dramatis personae* also remains the same—a generalist judge, a lay jury, the attorneys, and party-called witnesses. The Consensus Rule does not require the introduction of additional actors, whether they are neutral experts, science magistrates,¹⁷¹ or expert tribunals.¹⁷²

These trappings may seem conceptually irrelevant, and perhaps they are to some extent. Indeed, departing from adversarialism may further help inquiries under the Consensus Rule.¹⁷³ But history suggests that departing too far from standard practice often dooms proposed scientific evidence reforms to failure. Commentators have proposed the use of court-appointed experts since the first cases involving expert witnesses, yet court-appointed experts have never caught on.¹⁷⁴ The most probable reason is that neutral experts seem alien to the American legal system. Judges shun them as antithetical

168. This procedure is similar to one developed by some appellate courts through a judicial notice mechanism. *E.g.*, *Johnson v. Commonwealth*, 12 S.W.3d 258, 261 (Ky. 1999); *Hernandez v. State*, 116 S.W.3d 26, 29 (Tex. Crim. App. 2003). Judicial notice, however, is arguably not the correct conceptual framework. For one thing, it is not any appellate court determination that should be judicially noticed, but only those in which no reasonable jury could find differently. For another, judicial notice suggests a certain permanence and indisputability which could be counterproductive. If the underlying scientific consensus changes, the appellate court should be ready to overrule the empirically dependent precedent.

169. FED. R. EVID. 706.

170. Edith Beerdson, *Litigation Science After the Knowledge Crisis*, 106 CORNELL L. REV. 529, 584–85 (2021).

171. Dillon, *supra* note 66, at 295–301.

172. Hand, *supra* note 15, at 56 (proposing expert tribunals).

173. For example, determinations of scientific consensus could be made through court-appointed panels or even by asking scientific organizations directly.

174. Edward K. Cheng, *Same Old, Same Old: Scientific Evidence Past and Present*, 104 MICH. L. REV. 1387, 1393–96 (2006).

to passive judicial values, and attorneys oppose them for fear of losing control over the litigation.¹⁷⁵

The Consensus Rule thus offers an elegant solution to the battle of the experts. It eliminates the most pernicious aspect—the problem of having nonexperts judge experts—by deferring to the expert community. It however retains the “battle” aspect cherished by defenders of the adversarial system. The parties continue to be able to present warring experts of their choice, but now the lay factfinder has the competency to sort through the testimony.

IV. CONCERNS ABOUT THE CONSENSUS RULE

As promising as the Consensus Rule is as a solution to the expert paradox, it raises some concerns. Is deference to an institution outside the legal process legitimate? What happens if a given expert community’s view is misguided or entrenched? How is consensus defined, and what tools will litigants and factfinders use to determine it? And finally, despite the claims to the contrary, might the Consensus Rule be simply too radical—both doctrinally and practically? Does it infringe too much on the jury’s domain or represent too significant a departure from traditional admissibility rules? This Part addresses all of these questions in turn.

A. The Legitimacy Objection

The legitimacy objection to the Consensus Rule—or any deferential approach to expert evidence—is perhaps best expressed by Tony Ward:

It is axiomatic, at least in Anglo-American law, that judges and juries are responsible for reaching verdicts on the basis of their own understanding of the evidence presented to them. This task is not to be delegated to experts. Implicitly, the law is committed to an internalist epistemology: decisions about what the courts are to take to be true must not only be reliable . . . but must be justified from the perspective of those who make them. If experts “stood in for” the jury, they might or might not make more accurate decisions, but those decisions would not be justified in the constitutionally accepted way.¹⁷⁶

Ward further argues that this axiom is seen in doctrines that bar evidence without explanation, such as the ban on credibility experts or the prohibition on *ipse dixit* expert testimony.¹⁷⁷ Legal actors must

175. Gross, *supra* note 8, at 1197–99 (arguing that the neglect of court-appointed experts is due partly to trial bar opposition and partly to an adversarially focused judicial outlook).

176. Ward, *supra* note 113, at 266 (footnotes omitted).

177. *Id.* at 272; *see also* Gen. Elec. Co. v. Joiner, 522 U.S. 136, 137 (1997) (“Nothing . . . requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.”); Anne Bowen Poulin, *Credibility: A Fair Subject for Expert*

operate on the basis of evidence “*accessible to them* (and the public at large).”¹⁷⁸

Responding to the legitimacy objection requires that we unpack the reasons for this purported commitment to an internalist epistemology. These reasons are interrelated to be sure, but there are at least three distinct streams in the legitimacy objection: one about the nature of knowledge, another about democracy, and a final one about public acceptability.

1. Not Knowledge

The knowledge stream has its origins in conventional arguments that “appeals to authority” either do not constitute actual knowledge or are a form of inferior knowledge.¹⁷⁹ A factfinder’s decision based on deference is accordingly insufficiently justified and thus illegitimate. This traditional position, however, has become increasingly questioned as epistemologists have acknowledged that what we know depends on the testimony of others.¹⁸⁰ The deference to the expert community involved in the Consensus Rule is also different from usual appeals to authority. As philosopher Allan Hazlett suggests, the reasoning behind deference to scientific consensus comes not from authority per se, but the process—“the extent to which the proposition . . . has emerged intact from a certain process of empirical testing and academic criticism.”¹⁸¹ The fact that a scientific consensus exists, independent of authority, makes it likely that the consensus finding is true.¹⁸²

We can also simply reject Ward’s rather strong premise. Perhaps the legal system prefers an internal epistemology, but the law does not require it regardless of the cost to accuracy.¹⁸³ Even if reliance on authority is not “knowledge” in some philosophical sense, in certain

Testimony?, 59 FLA. L. REV. 991, 1001–02 (2007) (noting that the ban on credibility experts is controversial under modern evidence law).

178. Ward, *supra* note 113, at 274.

179. WALTON, *supra* note 19, at 67–68 (discussing arguments that appeals to authority are not actual knowledge, or that they are inferior because authority can become “tyrannical and irrational”).

180. Walton argues that the mistake made by traditional arguments is that they view appeals to authority in binary terms: right or wrong. *Id.* at 29. Instead, he suggests that there should be a presumption in favor of expert authority, but one that is subject to critical inquiry. *Id.* at 28–30.

181. Allan Hazlett, *The Social Value of Non-Deferential Belief*, 94 AUSTRALASIAN J. PHIL. 131, 149 (2016).

182. *Id.* at 148 (“I appeal to something like the principle that there would not easily be a scientific consensus that p unless it were the case that p.”).

183. Ward, *supra* note 113, at 274–75 (“When assessing expert evidence, the task of juries and judges is to determine the strength of the reasons *accessible to them* (and to the public at large) for believing what experts assert.”).

contexts it can still form the basis of justified decisions,¹⁸⁴ and expert evidence is precisely one of those contexts. The deference to the expert is not done out of laziness; it is a calculated strategy that maximizes the chance of arriving at the correct result under the constraints we face.¹⁸⁵

2. Not Democratic

Another aspect to the legitimacy concern is that deference is antidemocratic. This objection is primarily political as opposed to epistemic. Courts are public institutions, and juries are an element of participatory democracy. Forcing factfinders to defer to the scientific community, which is not representative of the public, smacks of usurpation.

In responding to this concern, we should emphasize the limited deference that the Consensus Rule requires. The factfinder only defers on matters involving specialized factual knowledge. Decisions involving nonspecialized knowledge and (more importantly) value judgments remain firmly within the purview of the judge or jury. One reason why the jury is an important democratic institution is because it enables ordinary citizens to decide value-laden aspects of cases, and this power remains untouched. Besides, on factual matters, since it will typically lack firsthand knowledge, the jury will always need to defer at some level—perhaps not as formally as with the Consensus Rule, but at some level nevertheless.

Additionally, under the Consensus Rule, the (democratic) factfinder is still deciding the case. Unlike with the use of expert tribunals, we have not replaced the jury with a nondemocratically accountable institution. The jury critically remains morally accountable for its decision; it is not abdicating its role as a check on the legal system. To be sure, the Consensus Rule changes somewhat the questions that the jury answers, but the jury is still the

184. Hardwig, *supra* note 102, at 339 (arguing that even if a layperson (i) did not do the inquiry; (ii) is not competent to do the inquiry; (iii) cannot assess the expert's evidence; and (iv) cannot even understand the expert's evidence, the layperson's belief can still be "rationally justified").

185. WALTON, *supra* note 19, at 73–75 (discussing that there are unreasonable appeals to authority, such as when a person is not an expert or lacks qualifications, and reasonable ones such as when a person has additional knowledge); Hardwig, *supra* note 102, at 340 (arguing that even though Kant holds independent judgment up as the ideal, there is no moral duty to do so in all cases because it is impractical); *see also* NEIL VIDMAR & VALERIE P. HANS, *AMERICAN JURIES: THE VERDICT* 177–79 (2007) (suggesting that relying on credentials "need not be irrational or silly, particularly if issues are esoteric and complex or if one side's experts have stronger or more germane credentials than the other's").

decisionmaker.¹⁸⁶ And while the Consensus Rule does limit the jury's decisionmaking power, at no point has the legal system ever said that the jury's discretion is unfettered.¹⁸⁷ Indeed, the desire to guide (or control) juries motivates much if not all of the law of evidence.¹⁸⁸

There are two other arguments that the Consensus Rule is somehow undemocratic. One is that it is "elitist, since it implies that some people's opinions are more valuable than others."¹⁸⁹ Elitism, however, arguably requires (a) unjustified preferences for (b) an in-group, and the Consensus Rule involves neither. As philosopher C. A. J. Coady has well articulated:

Two things should be said about [the elitism objection]. The first is that some people's opinions *are* more valuable than others, because some people *are* better informed than others. The second is that it is not as if there are two groups of people, the experts and the novices. We are all novices with respect to some subjects, and (I would suggest) experts with respect to others.¹⁹⁰

The other "undemocratic" argument is that deference impairs democratic accountability in the sense that it prevents decisionmakers from giving reasoned explanations for their decisions.¹⁹¹ This objection, however, is a rather odd one to make in the jury context, which is characterized by general verdicts with no explanation at all. In fact, the focus on scientific consensus may in fact make jury decisions under the Consensus Rule more interpretable than at present.

186. On this score, Allan Hazlett poses an interesting hypothetical involving the citizens of Testimonia, who "base *all* of their beliefs on the testimony" of "an omniscient . . . benefactor." Hazlett, *supra* note 181, at 144. He argues that under these conditions, referenda in Testimonia are "kind of a sham, and not fully democratic." *Id.* The critical difference between the Consensus Rule and Testimonia, however, is the extent of the deference. By handing over not only factual but also moral questions to the benefactor, the citizens of Testimonia have indeed abdicated their responsibility and accountability. The jury under the Consensus Rule has not.

187. Ilya Somin has argued that even in the voting context, it is unethical "to make decisions based on ignorance, regardless of whether deference to scientists or some other strategy could enable them to make better-informed choices." Somin, *supra* note 103; *see also* Ilya Somin, *Jason Brennan's The Ethics of Voting*, VOLOKH CONSPIRACY (Apr. 12, 2011, 9:10 AM), <https://volokh.com/2011/04/12/jason-brennans-the-ethics-of-voting/> [https://perma.cc/H3SC-QUYG] (disagreeing with "the default assumption . . . that it is perfectly ethical for voters to support any candidate for any reason they want").

188. The theory that evidence law is about "epistemic paternalism" goes back to at least Thayer and Wigmore. Hock Lai Ho, *The Legal Concept of Evidence*, STAN. ENCYC. PHIL. (Edward N. Zalta ed.), <https://plato.stanford.edu/entries/evidence-legal/> (rev. Oct. 8, 2021) [https://perma.cc/3XG8-VAHD].

189. COADY, *supra* note 41, at 31.

190. *Id.*

191. Ward, *supra* note 113, at 265 (arguing that strong deference is inappropriate when "the beliefs adopted from the expert have to be publicly justified"); COADY, *supra* note 112, at 296 (opposing expert panels because it would create the danger that courts would not produce a result explicable to all parties).

3. Not “Acceptable”

A final aspect of the legitimacy objection involves public acceptability. As Charlie Nesson famously argued in the statistical evidence context, the goal of the proof process is not only accurate verdicts, but acceptable ones as well.¹⁹² If juries defer to scientific consensus rather than deciding substantive expert questions independently, will that make their verdicts less “acceptable” in some way to the public? The available social science suggests not—in fact, the public often finds the opinion of the scientific community compelling when trying to make conclusions on scientific issues. For example, one recent study found that one of the most influential factors in predicting a person’s views on a disputed scientific issue is the majority vote of scientists, and this factor is most influential when the topic was esoteric and unfamiliar.¹⁹³ This result holds even for scientific disputes that have become politicized. For example, “highlighting the (normative) consensus among medical scientists that vaccines are ‘safe’” seems to both convince subjects that there is more agreement and improve their attitudes toward vaccination.¹⁹⁴ Similarly, “highlighting scientific consensus increases belief in human-caused climate change.”¹⁹⁵ To be sure, consensus does not convince everybody, but the studies certainly suggest that an earnest, in-depth examination of the scientific consensus does indeed influence lay decisionmaking, even under the most trying of circumstances.

192. Charles Nesson, *The Evidence or the Event?: On Judicial Proof and the Acceptability of Verdicts*, 98 HARV. L. REV. 1357, 1358 (1985).

193. Branden B. Johnson, Nathan F. Dieckmann & Marcus Mayorga, Cues to Relative Credibility: Their Relative Influence on Lay Americans’ Judgments of Disputing Groups of Scientists 19–21 (Mar. 10, 2020) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3552167 [<https://perma.cc/FZ4Y-3PCP>] (observing that these factors had their strongest effect on questions about dark matter and their weakest effect on questions about marijuana). *But see* Branden B. Johnson, “Counting Votes” in *Public Responses to Scientific Disputes*, 27 PUB. UNDERSTANDING SCI. 594, 606 (2018) (finding in a different study that information on the distribution of scientist views “had modest indirect effects”).

194. Sander L. van der Linden, Chris E. Clarke & Edward W. Maibach, *Highlighting Consensus Among Medical Scientists Increases Public Support for Vaccines: Evidence from a Randomized Experiment*, 15 BMC PUB. HEALTH, Dec. 2015, at 3.

195. Sander L. van der Linden, Anthony A. Leiserowitz, Geoffrey D. Feinberg & Edward W. Maibach, *The Scientific Consensus on Climate Change as a Gateway Belief: Experimental Evidence*, 10 PLOS ONE, Feb. 2015, at 2; *see also id.* at 6 (finding no evidence of a “backfire” effect in which the consensus information caused subjects to entrench their positions).

B. The Problem of Conservatism

What if the experts are wrong?¹⁹⁶ Another complaint levelled against deference is that it can be excessively conservative. The expert community can be subject to bias,¹⁹⁷ and its entrenched interests can perpetuate wrong-headed ideas.¹⁹⁸ Consequently, deferring to consensus can result in the legal system being behind the times.¹⁹⁹

The Consensus Rule is perhaps a touch conservative, as it automatically rejects cutting-edge or controversial positions. But given the context, it arguably does so with good justification. Since legal actors lack epistemic competence on expert topics, they will find it difficult if not impossible to separate the wheat from the chaff. So the Consensus Rule plays the probabilities. Which rule is more accurate more of the time: (a) asking lay decisionmakers to sort through expert theories distorted by the adversarial process; or (b) simply deferring to the prevailing opinion in the expert community? The choice seems clear.

For most cases, the reader will likely agree with the merits of “playing the odds” in this way. Two archetypal cases, however, will contribute to some nagging doubts. The first, which we can call “heroic cases,” involve famous instances in which the establishment ridiculed a radical theory only to be proven wrong by history. The second, which we can label “obvious cases,” involve entrenched expert communities which are “clearly” wrong to objective outsiders. In a sense, these special cases—the chance to do something special, and the chance to avoid obviously dumb decisions—are the cost of rule-based decisionmaking under the Consensus Rule. This Section tackles each in turn.

196. FREEDMAN, *supra* note 57, at 87 (quoting Bertrand Russell) (“Even when the experts all agree, they may well be mistaken.”).

197. Daniel J. Solove, *The Darkest Domain: Deference, Judicial Review, and the Bill of Rights*, 84 IOWA L. REV. 941, 1014 (1999) (noting that expert opinions are similarly subject to bias and discrimination).

198. WALTON, *supra* note 19, at 70 (quoting ROBERT H. THOULESS, STRAIGHT AND CROOKED THINKING (1936) as arguing that the “prestige of professors and learned men has been used to crush many movements of scientific discovery at their beginning”); Barbara Pfeffer Billauer, *Daubert Debunked: A History of Legal Retrogression and the Need to Redefine ‘Science’ in Law*, 21 SUFFOLK J. TRIAL & APP. ADVOC. 1, 37 (2015) (quoting Max Planck (“[N]ew scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die”).

199. ORESKES & CONWAY, *supra* note 9, at 64 (noting that consensus reports from the National Academy of Sciences often end up with “least common denominator” findings, and that “[r]adical claims rarely pass through this process intact—even ones that later turn out to be true”); *cf.* Solove, *supra* note 197, at 1013 (arguing that institutions can have customs that are resistant to change).

1. Heroic Cases

History celebrates scientists whose theories were first derided by the establishment but later proven true. The classic stories have produced household (or close to household) names: Copernicus, Galileo, Mendel (genetics), Semmelweis (germ theory). More modern cases typically produce Nobel Prizes. For years, the medical establishment dismissed Barry Marshall and Robin Warren's claim that stomach ulcers were caused by a bacterium, *H. pylori*, rather than excess stomach acid. They shared the Nobel Prize in Medicine in 2005.²⁰⁰

By deferring, the Consensus Rule does hamper the legal system's ability to be an agent for change.²⁰¹ But we should acknowledge that heroic cases are famous in part because they are exceptional. Under regular circumstances, mainstream science has the correct answer, or at least the best answer given current knowledge—that is why the scientific community commands respect. Among the multitude of maverick ideas, there may be a black swan that will one day become the consensus view, but the odds of picking that one pathbreaker are long.²⁰² Most crazy ideas remain crazy ideas.

This argument does not mean that *experts* should not take seriously the iconoclastic ideas of their peers. That is how scientific inquiry progresses—with publication, replication, refutation, and the like. Rather, the argument is that the *legal system* should not be looking to find the proverbial needle in the haystack. The question about whether stomach acid or bacteria causes ulcers was one for doctors to debate over many years, not for the legal system and its lay decisionmakers to decide over the course of two weeks.²⁰³ Experts are able to properly process the maverick ideas; legal actors are not.²⁰⁴ As

200. *The Nobel Prize in Physiology or Medicine 2005*, NOBEL PRIZE, <https://www.nobelprize.org/prizes/medicine/2005/summary/> (last visited Feb. 14, 2022) [<https://perma.cc/3YJM-YNME>].

201. WALTON, *supra* note 19, at 1–2 (raising the issue that deference to authority prevents movement in thought); Billauer, *supra* note 198, at 38–39 (referencing many occasions where pathbreaking work was ridiculed).

202. 5 FAIGMAN ET AL., *supra* note 12, § 1.6 (“Commentators [defending] *Frye* argue that for every Galileo or Einstein there are hundreds of Lysenkos with ‘revolutionary’ theories that are eventually proven false by empirical research.”); COLLINS, *supra* note 26, at 92.

203. COLLINS, *supra* note 26, at 92.

204. *Stokes v. State*, 548 So. 2d 188, 193–94 (Fla. 1989) (“[A] courtroom is not a laboratory, and as such it is not the place to conduct scientific experiments. If the scientific community considers a procedure or process unreliable for its own purposes, then the procedure must be considered less reliable for courtroom use.”).

such, while the Consensus Rule forgoes making the heroic decision, it is the best we can do under the circumstances.²⁰⁵

Finally, it is worth reemphasizing the limited nature of the deference required by the Consensus Rule. Deference does not apply to new scientific areas with active disputes, nor does it apply to political or other nonexpert issues. Thus, the Consensus Rule does not foreclose courts from guiding the development of nascent technologies, as they did in DNA profiling.²⁰⁶ It also does not inhibit courts from using their independence to heroically reform troubling social institutions.²⁰⁷

2. “Obvious” Cases

Deference is an especially bitter pill if the consensus position appears obviously wrong or unjustified. What happens if the relevant expert community is a guild²⁰⁸ founded on dubious or nonscientific precepts, or the community is so entrenched or captured by special interests that the consensus seems illegitimate?²⁰⁹ A number of philosophers have suggested that in these cases, departing from consensus may be acceptable.²¹⁰ For example, Lawrence Lengbeyer argues that a layperson can justifiably refuse to defer if an ostensibly science-based recommendation involves nonscientific reasoning, overgeneralization, or research “of doubtful quality.”²¹¹ After all, if the expert community is not operating under the rules we expect of science, why defer?

As tempting as such a safety valve may be, we should be reluctant to adopt it. For one thing, the standard is extremely difficult to apply. Lengbeyer argues for nondeference only when laypersons can

205. Billauer, *supra* note 198, at 39–41 (acknowledging that the general acceptance test “may be the best we have in some legal circumstances”).

206. *Cf.* Solove, *supra* note 197, at 1012–13 (arguing that the problem with deference is that it “undermine[s] the most important contribution of the judiciary to contemporary problems: critical inquiry”).

207. *See id.* at 1015–16 (criticizing deference because “the judiciary gives inadequate attention to the troubled history of certain institutions”).

208. *E.g.*, Jennifer L. Mnookin, *Fingerprint Evidence in an Age of DNA Profiling*, 67 BROOK. L. REV. 13, 64–65 (2001) (noting the problem of allowing professionals to testify when the profession’s practices are at issue).

209. COLLINS, *supra* note 26, at 112 (suggesting nonexpert criticism of scientific consensus may be valid when those criticisms involve lay meta-expertise, such as evidence of a conspiracy, etc.); Hardwig, *supra* note 102, at 342 (criticisms about bias and bad faith are justified reasons for refusing to defer).

210. *See* Boaz Miller, *Scientific Consensus and Expert Testimony in Courts: Lessons from the Benedictin Litigation*, 21 FOUNDS. SCI. 15, 20–21 (2016) (discussing a theory of knowledge-based consensus, which requires shared assumptions and standards, multiple streams of evidence, and a socially diverse pool of members).

211. Lengbeyer, *supra* note 123, at 1.

“discernibly” spot such flaws, but again, given that lay actors will lack expertise, how will they be able to detect nonscientific reasoning or dubious research quality? The inquiry would quickly revert to the *Daubert* framework. Relatedly, the decisionmaking literature has shown in other contexts that statistical decision rules often work better without such safety valves, because decisionmakers find too many special cases and destroy the advantages of the rule.²¹² The trade-off is a familiar one between rules and standards: a rule may seem over- or under-inclusive at times but may provide more accuracy overall than a case-by-case standard. Evidence law makes this tradeoff all the time. Hearsay or character evidence is not always unreliable; we just do not trust juries (or even judges) to handle it on a case-by-case basis.

In many ways, even in “obvious cases,” change should come from within the expert community, not from nonexpert legal decisionmakers. If the extant subcommunity is too entrenched, then change will require entry by experts from other fields or a new generation. But the key is that the legal system should wait for the experts to get it right (or for sufficient controversy to break the consensus), not strike off on its own. This process is in a sense what has happened with traditional forensic identification methods. Recent commentators have expressed frustration that courts have not lived up to their *Daubert* responsibilities, but in fact, courts may be unknowingly (but correctly) following a Consensus Rule approach.

C. Determining Consensus

Another objection to the Consensus Rule involves operational details. How will legal actors determine the existence and the content of a consensus? Critics of *Frye* have argued that “general acceptance” was both difficult to prove and easy to manipulate, a situation that made the standard unworkable.²¹³

Like most worthwhile questions asked in the legal context, there are few straightforward answers to the problem of proving consensus. Determining consensus is difficult in some cases, and less so in others. But the absolute difficulty of the question is somewhat beside the point, because relative to the substantive scientific questions asked by the

212. We see this most famously in the psychological literature on statistical predictions of dangerousness. In that context, naïve statistical prediction rules are more accurate than the individualized clinical judgments of experts. If a safety valve is added so clinicians can exempt special cases, accurate rates actually go down. See, e.g., Robyn M. Dawes, David Faust & Paul E. Meehl, *Clinical Versus Actuarial Judgment*, 243 *SCIENCE* 1668, 1671 (1989) (reviewing literature). And note that this stunning result occurs when the safety valve is operated by an *expert*, not a lay person.

213. E.g., WALTON, *supra* note 19, at 178; Jasanoff, *supra* note 106, at 1728.

Daubert framework, Consensus Rule questions are far more manageable. At least answering the consensus question requires no special expertise.

Consensus is a bit like the reasonable person standard in negligence. The inquiry is more vague than we might prefer, but it is squarely within the competency of a lay factfinder. And the vagueness in our context is arguably more acceptable than in the *Frye* context. Vagueness in admissibility standards gives judges discretion to usurp the jury's role as factfinder. With the Consensus Rule, the jury itself determines consensus (except in extreme cases), so discretion is arguably less problematic.

Besides, just as legal actors use various tools to give contour to the nebulous reasonable person standard—definitions, cost-benefit analysis, industry customs, regulations, etc.—so too are there tools and guideposts to help the jury in deciding consensus. We discuss some of them below.

1. Definitions

One cause of ambiguity in this context comes from the imprecision of language. The word consensus has two partly conflicting dictionary meanings: (1) a “general agreement: unanimity”; and (2) “the judgment arrived at by most of those concerned.”²¹⁴ At one pole, consensus can mean unanimity, which might induce objections that consensus hardly ever exists. At the other pole, consensus can mean majority, which might cause other objections that a majority rule is insufficient and that the “dissensus” condition will never exist.

For our purposes, consensus means neither of those two poles, but rather something in between.²¹⁵ Remember that the term “Consensus Rule” is only a shorthand for the actual standard, which is: “If the relevant scientific community believes a fact involving specialized knowledge.”²¹⁶ The standard therefore is really about shared belief, group decisionmaking, and when it is fair to attribute a particular substantive position to a group as a whole.²¹⁷ Under our

214. *Consensus*, MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/consensus> (last visited Dec. 13, 2021) [<https://perma.cc/9LCL-KA69>].

215. John Beatty & Alfred Moore, *Should We Aim for Consensus?*, 7 *EPISTEME* 198, 200 (2010) (arguing against unanimity and majority because both potentially mask a lack of deliberative thought).

216. *Supra* Section II.B.

217. Miller, *supra* note 210, at 19 (defining consensus as “roughly, [when the members] have agreed to let the content of the shared belief stand as the position of the group”); Beatty & Moore, *supra* note 215, at 207 (same); Margaret Gilbert, *Modelling Collective Belief*, 73 *SYNTHESE* 185,

definition of consensus, there may be individual experts who disagree substantively, but reasonable experts will all agree that the position represents their community. Consensus is thus not about unanimity²¹⁸ or some quantitative threshold, but rather requires judgment—judgment that the factfinder is equipped to exercise. Indeed, the subjectivity here is arguably a feature, as a threshold would just encourage further manipulation by the parties.²¹⁹

2. Tools for Determining Consensus

Proving consensus under the Consensus Rule will involve many types of evidence and depend on context. Fortunately, however, legal actors already face this question when attempting to establish “general acceptance” under *Frye* or as a factor under *Daubert*.

Perhaps the most popular method of proving general acceptance is through testimony. An expert simply reports on what her expert community believes. While straightforward, reliance on experts raises familiar problems, including the battle of experts. Recall, however, that this battle of experts is far less problematic than the traditional battle of experts over substantive expert issues, as a lay decisionmaker is qualified to assess contradictory testimony on what a community believes. Indeed, one might even argue that testimony about what an expert community believes approaches lay testimony, as it hardly involves expert judgment at all.²²⁰

One can also prove general acceptance through consensus statements that are periodically issued by expert organizations. Most famous among these are the reports of the National Research Council, which have included influential works on DNA profiling,²²¹ polygraphs,²²² electromagnetic fields,²²³ and forensics.²²⁴ Other

194 (1987) (“A group *G* believes that *p* if and only if it is common knowledge that the individual members of *G* have openly expressed their willingness to let *p* stand as the view of *G*.”).

218. Miller, *supra* note 210, at 19 (arguing consensus is not zero dissent).

219. See Beatty & Moore, *supra* note 215, at 200 (arguing that requiring unanimity “encourages misleading reports of the state of scientific agreement to the public” and “unfairly privileges the status quo”).

220. Testimony about what the scientific community believes is of course specialized, but only slightly more so than, say, reputation testimony about what a community believes about a person’s character.

221. NAT’L RSCH. COUNCIL, NAT’L ACAD. OF SCIS., THE EVALUATION OF FORENSIC DNA EVIDENCE (1996).

222. NAT’L RSCH. COUNCIL, NAT’L ACAD. OF SCIS., THE POLYGRAPH AND LIE DETECTION (2003).

223. NAT’L RSCH. COUNCIL, NAT’L ACAD. OF SCIS., POSSIBLE HEALTH EFFECT OF EXPOSURE TO RESIDENTIAL ELECTRIC AND MAGNETIC FIELDS (1997).

224. NAT’L RSCH. COUNCIL, NAT’L ACAD. OF SCIS., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009).

organizations have issued similar consensus statements, such as the Intergovernmental Panel on Climate Change's reports.²²⁵

Consensus statements, however, are not always available, so a factfinder may also rely on other types of systematic reviews. Depending on the specifics, they may be more or less representative of the expert community's judgment, but still provide evidence of the consensus. Cochrane (formerly known as the Cochrane Collaboration), for example, produces systematic reviews of the medical and health literature.²²⁶ The Mental Measurements Yearbook compiles information on psychological test validity.²²⁷ Even treatises and meta-analyses by individuals or groups of authors are a reflection of what the consensus is, though these may have a greater risk of bias. As long as the factfinder uses these tools to ask the deferential question rather than the substantive one, it continues to apply the Consensus Rule.

Beyond these more traditional pathways, there may be other, more creative tools for ascertaining general acceptance as well. For example, building on the work of Uri Shwed and Peter Bearman, I have proposed using citation networks to determine the existence and content of a scientific consensus.²²⁸ Susan Fiske and Eugene Borgida have proposed "adversarial collaboration," in which two opposing researchers write a joint statement as a way of extracting consensus positions.²²⁹ And Adina Schwartz has proposed a procedure called "dual iterated disinterested acceptance," in which a third party (perhaps an organization) would identify two noncollaborating experts from the community to opine on general acceptance.²³⁰

3. Consensus on Case-Specific Facts

Case-specific facts present a difficult challenge for the Consensus Rule. An expert community will almost always have views

225. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT: GLOBAL WARMING OF 1.5 °C (2018).

226. See *About Us*, COCHRANE, <https://www.cochrane.org/about-us> (last visited Feb. 14, 2022) [<https://perma.cc/YC9M-QTAV>].

227. Tess M.S. Neal, Christopher Slobogin, Michael J. Saks, David L. Faigman & Kurt F. Geisinger, *Psychological Assessments in Legal Contexts: Are Courts Keeping "Junk Science" Out of the Courtroom?*, 20 PSYCH. SCI. PUB. INT. 135, 138 (2019) (characterizing the *Mental Measurements Yearbook (MMY)* as "the most accurate, complete, and authoritative source of information about published psychological tests").

228. Edward K. Cheng, *Proving General Acceptance Using Modularity* (June 30, 2020) (unpublished manuscript) (on file with author); Uri Shwed & Peter S. Bearman, *The Temporal Structure of Scientific Consensus Formation*, 75 AM. SOCIO. REV. 817, 818–20 (2010) (discussing citation networks).

229. Susan T. Fiske & Eugene Borgida, *Standards for Using Social Psychological Evidence in Employment Discrimination Cases*, 83 TEMP. L. REV. 867, 872 (2011).

230. Schwartz, *supra* note 44, at 206–07.

on general facts relevant to it. Sometimes there will be a consensus, and sometimes not, but the expert community will have at least considered the answer. Case-specific facts, by contrast, will not garner such attention.

We can adapt the Consensus Rule to these situations in two related ways. One possibility is for the factfinder to use the Consensus Rule as a mental framework or thought experiment. If experts testify about case-specific findings, such as an accident reconstruction, the jury can use that testimony to determine the facts that the relevant expert community likely would have found. The other possibility is for the factfinder to use the Consensus Rule to determine the appropriate method for an expert to use (a general fact), and then defer to that expert's application of the method. The key structural elements remain the same. The jury, not the judge, is the principal decisionmaker, and it takes a deferential perspective, looking to the community's accepted practices or conclusions.²³¹

D. Radicalism Concern: Inference

A final objection that critics may raise is that the Consensus Rule is too radical—that the use of an inference rule that is deeply deferential is foreign to what we have come to expect. Yet, while both aspects may be a little unusual for the legal system, neither is unprecedented. The evidence law does at times regulate inferences, and the legal system also at times defers to expert communities.

1. Regulating Inference

As previously mentioned, the Consensus Rule is not a rule of admissibility, but a rule of inference, and inference rules may at first seem foreign to American law. Much of American evidence law focuses on admissibility and seems to expect that factfinders will make their own independent inferences. Unlike other legal traditions, we do not have rules requiring a certain number of witnesses (so-called “counting rules”).²³² We do not tell factfinders how to weight or preference some

231. If the expert community lacks sufficient individualized data and would decline to make specific determinations, then the situation is one of dissensus. The jury would receive the general fact evidence under the Consensus Rule, but would otherwise be free to make its own independent findings on the specific facts. *See, e.g.,* David L. Faigman, John Monahan & Christopher Slobogin, *Group to Individual (G2i) Inference in Scientific Expert Testimony*, 81 U. CHI. L. REV. 417, 425–26 (2014) (discussing instances in which researchers agree that there is insufficient data to individuate from group findings).

232. *See* John H. Wigmore, *Required Numbers of Witnesses; A Brief History of the Numerical System in England*, 15 HARV. L. REV. 83, 83 (1901) (English common law recognizes that one

kinds of evidence over others.²³³ And in part because of general jury verdicts and secret jury deliberations, we have no accumulated precedent on inferences, valid or not. Direct inferential interventions occur only in extreme cases, such as when sufficiency rules remove an issue entirely from the factfinder.

But to say that evidence law does not regulate inferences is plainly false. Admissibility rules, although rather blunt instruments, are rules of inference. A factfinder cannot make inferences using evidence it does not hear, so admissibility rules indirectly regulate inference through screening. When courts ask juries to use evidence for one purpose and not for another, they regulate inference further and with greater precision. Evidentiary presumptions similarly tell factfinders what inferences to make in the absence of evidence, though the theory that underlies them is admittedly controversial.

Further, two inferential devices share some kinship with the Consensus Rule and may make it seem less foreign. The first is judicial notice. Rule 201 permits the judicial notice of adjudicative facts if it “is not subject to reasonable dispute,”²³⁴ thus allowing the court to force the jury to find certain facts based on the reliability of their source.²³⁵ Unlike the Consensus Rule, however, judicial notice operates only in extreme cases, as seen in the language requiring no reasonable dispute. On the other hand, judicial notice applies to nonspecialized facts, in which the judge possesses no greater epistemic competence than the jury. Judicial notice also completely supplants the jury—the judge determines the absence of reasonable dispute, which in turn determines the fact.²³⁶ By contrast, the Consensus Rule asks the jury to determine the consensus.

The second are so-called “irrebuttable” or “conclusive” presumptions. Nearly all legal scholars have eschewed the term as being an “awkwardly expressed [substantive] rule of law”²³⁷ because an irrebuttable presumption is essentially a legal definition: to say that fact A creates an irrebuttable presumption of fact B is to define fact B

witness is fundamentally insufficient). *But see* U.S. CONST. art. III, § 3 (“No Person shall be convicted of Treason unless on the testimony of two Witnesses to the same overt Act, or on Confession in open Court.”).

233. The exceptions, again, are preferences operationalized through admissibility rules. *See, e.g.*, FED. R. EVID. 804 (preferencing live testimony over hearsay unless the declarant is unavailable).

234. FED. R. EVID. 201.

235. *Id.* (allowing judicial notice of the fact if it is “generally known” or “can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned”).

236. *See* FED. R. EVID. 201(c)(1).

237. RICHARD D. FRIEDMAN, *THE ELEMENTS OF EVIDENCE* 553 (3d ed. 2004).

to include fact A.²³⁸ But whether expressed as an irrebuttable presumption or as a definition, these kinds of rules are commonplace. For example, children under eighteen are conclusively presumed to be wholly dependent on a decedent worker under workers' compensation law,²³⁹ and federal antiterrorism laws define a "terrorist organization" to be "an organization designated [by the Secretary of State] as a terrorist organization."²⁴⁰ These irrebuttable presumptions in a sense do what the Consensus Rule does. They define one fact—"dependency" or "terrorist organization"—using a predicate fact. The factfinder finds the predicate fact, and the other fact follows. So too with the Consensus Rule—the jury determines the scientific consensus, and the scientific fact follows.

There are two characteristics of the Consensus Rule, however, that may make it seem different from a conclusive presumption. One is that it involves the judgment of another (the expert community), which smacks of delegation. Rather than asking the factfinder to find a predicative fact directly, the Consensus Rule asks the factfinder to determine what the scientific community thinks. This procedure, however, is analogous to the antiterrorism statute, which defers to the Secretary of State.²⁴¹ The other, perhaps more important distinguishing characteristic is that the Consensus Rule is trans-substantive. For the most part, irrebuttable presumptions and definitional clauses operate in a single substantive area. The Consensus Rule by contrast would operate across all legal doctrines and apply to intermediate facts as well as explicit legal elements.

Finally, for criminal trials, there may also be concerns about whether the Consensus Rule infringes on a defendant's right to a jury trial, but these are arguably spurious, at least according to current Supreme Court doctrine. A criminal defendant is entitled to a jury determination on "all elements of the offense charged."²⁴² However, this jury trial right is generally thought to extend only to *elements* and not

238. James J. Duane provides a series of excellent examples of the needless use of "irrebuttable presumption" language in *The Constitutionality of Irrebuttable Presumptions*, 19 REGENT UNIV. L. REV. 149, 151–56 (2006).

239. *Id.* at 167 (citing the Virginia Workers' Compensation Law, VA. CODE ANN. § 652-515(A) (2002)).

240. *United States v. Hammoud*, 381 F.3d 316, 331 (4th Cir. 2004), *vacated on other grounds and remanded*, 543 U.S. 1097 (2005); 18 U.S.C. § 2339B(g)(6).

241. 18 U.S.C. § 2339B(g)(6).

242. *Sullivan v. Louisiana*, 508 U.S. 275, 277–79 (1993); *see also United States v. Gaudin*, 515 U.S. 506, 510–11 (1995).

intermediate facts or the evidence used to prove them.²⁴³ Furthermore, recent violations of the jury trial right have involved *judicial* determinations of an element.²⁴⁴ By contrast, the Consensus Rule retains the jury as the determiner of the predicate fact (i.e., the scientific consensus), and in most cases, the rule will operate on some intermediate fact, not an element itself.

2. Deference

In addition to raising legitimacy concerns, the Consensus Rule's deferential approach may also seem alien to a legal system that celebrates the independence of juries. As we see below, however, deference to expert communities does occur in the legal system, often in contexts exhibiting the same epistemic competence difficulties presented by scientific evidence.

a. Medical Malpractice

Traditionally, in medical practice law, the jury does not independently decide the standard of care using a reasonable person standard. The jury defers to the medical community by determining whether the defendant doctor violated the custom of the profession. The reason? As one classic text suggests, “[N]o other standard is practical. Our judges and juries are usually not competent to judge whether or not a doctor has acted reasonably. The conformity test is probably the only workable test available.”²⁴⁵

The procedure for proving a violation of medical custom shares characteristics with the Consensus Rule. Typically, the parties “ask[] medical experts whether the particular procedure used by the defendant is medically acceptable in the relevant medical community.”²⁴⁶ When the individual experts inevitably disagree, the jury determines which experts to believe—but the inquiry is what the medical custom is, not what is medically advisable.²⁴⁷

243. 1 MUELLER & KIRKPATRICK, *supra* note 80, § 3:17 (“[T]he standard of proof beyond a reasonable doubt applies to each *element* of the crime but not to each and every piece of evidence offered to prove an element.”).

244. *See, e.g., Gaudin*, 515 U.S. at 513–15, 523 (“The trial judge’s refusal to allow the jury to [determine an element of the charged crime] infringed [on the defendant’s] right [to have a jury determine his guilt].”).

245. Clarence Morris, *Custom and Negligence*, 42 COLUM. L. REV. 1147, 1164 (1942).

246. DAN B. DOBBS, PAUL T. HAYDEN & ELLEN M. BUBLICK, *THE LAW OF TORTS* § 296 (2d ed. 2021).

247. *Id.*

Debates and exceptions surrounding the custom rule also reflect many of the concerns that surround the Consensus Rule. For example, the appropriateness of deferring to custom is constantly a source of conflict. Some jurisdictions have recently shifted toward a nondeferential “reasonable doctor” standard,²⁴⁸ and the (in)famous case of *Helling v. Carey*, in which the Washington Supreme Court tried to reform screening practices for glaucoma, illustrates nondeferential judicial behavior along with its dangers.²⁴⁹ One might even classify the court-based development of informed consent doctrine in opposition to then-existing medical practice as a recognition that experts are owed no deference on value judgments.²⁵⁰

b. False Advertising

Another area featuring deference similar to the Consensus Rule is false advertising. In *Brown v. GNC Corp.*, the Fourth Circuit held that under various state laws, in order to recover for false advertising, the plaintiff must show that all reasonable experts in the field agree that the defendant’s representations were false.²⁵¹ This rule is notably nontraditional in that it does not ask for the factfinder’s independent judgment on the merits, but rather seems to defer to expert judgment.

Criticism of the Fourth Circuit’s rule has fallen along predictable lines. In an amicus brief supporting plaintiff’s motion for rehearing, a group of law professors argued that literal falsity was a matter for the jury, not experts, and that the case should not be dismissed “before

248. *Id.* § 294 (“A number of courts have now said or implied that the standard of care for health care providers is the reasonable care standard applied in negligence law generally.”); see also Philip G. Peters, Jr., *The Quiet Demise of Deference to Custom: Malpractice Law at the Millennium*, 57 WASH. & LEE L. REV. 163, 180–85 (2000) (detailing a shift in the law).

249. 519 P.2d 981, 982–83 (Wash. 1974); see also D. Clay Kelly & Gina Manguno-Mire, Commentary, *Helling v. Carey, Caveat Medicus*, 36 J. AM. ACAD. PSYCHIATRY & L. 306, 307 (2008) (“[Using the glaucoma test at issue in *Helling*] on persons under 40 result[s] in a high rate of false-positive results. . . . Subsequent research has consistently demonstrated that . . . the result has been an increase in the cost of care without a commensurate reduction in morbidity.” (footnotes omitted)). Judge Hand’s famous decision in *The T.J. Hooper* is of course the manifesto on independence over deference to expertise:

Indeed in most cases reasonable prudence is in fact common prudence; but strictly it is never its measure; a whole calling may have unduly lagged in the adoption of new and available devices. It never may set its own tests, however persuasive be its usages. Courts must in the end say what is required; there are precautions so imperative that even their universal disregard will not excuse their omission.

The *T.J. Hooper*, 60 F.2d 737, 740 (2d Cir. 1932).

250. See *Canterbury v. Spence*, 464 F.2d 772, 783 (D.C. Cir. 1972); cf. *supra* Section II.A (discussing value-laden questions).

251. *Brown v. GNC Corp. (In re GNC Corp.)*, 789 F.3d 505, 515–17 (4th Cir. 2015).

anyone evaluates the competing expert opinions.”²⁵² One need not take a stance here on this controversy—after all, given that truth in advertising is about *consumer* protection, it is not at all clear that deference to experts is appropriate in this context. The point, however, is that once again, deference is not alien to the legal system, but rather occupies a familiar place in tension with independent jury decisionmaking.

c. Patents

Patents too feature a mental construct that suggests deference to an expert community. Patent law, in determining the patentability requirement of nonobviousness, references a “person having ordinary skill in the art,” often referred to as a “PHOSITA.”²⁵³ In order for a patent to be valid, the invention claimed must be nonobvious not to the jury or a judge, but to a PHOSITA.²⁵⁴

Further reflection suggests that the PHOSITA is just a stand-in for the expert community. Patents typically involve factual inquiries in areas involving significant expertise, and the law does not want lay decisionmakers exercising independent judgment on the obviousness of a patent. Instead, patent law asks the factfinder to defer to what the expert community would say about the patent’s obviousness.²⁵⁵

Interestingly, Rebecca Eisenberg has observed that the Federal Circuit and lower courts in practice have drifted away from the PHOSITA construct in determining obviousness. The courts instead choose to focus on the written literature, choosing to determine obviousness as a matter of law themselves.²⁵⁶ As Eisenberg argues, however, “[a]ctive practitioners of a technology bring more to a problem than may be found in written prior art, including training, judgment, intuition, and tacit knowledge.”²⁵⁷ This criticism has some parallels with the problem with *Daubert* in toxic torts, which encourages lay decisionmakers to consider scientific studies independently, rather than tapping the more holistic and nuanced judgments of the expert community.

252. Brief of Law Professors as Amici Curiae in Support of Plaintiffs-Appellants’ Petition for Rehearing and for Rehearing En Banc, and in the Alternative, for Modification of Opinion and Judgment at 2, *In re* GNC Corp. 789 F.3d 505 (No. 14-1724).

253. 35 U.S.C. § 103.

254. *Id.*

255. Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 886 (2004) (noting there is no need to incentivize advances that are obvious to experts in the field).

256. *Id.* at 889.

257. *Id.* at 897.

d. Parentage (Historical)

The last example involves the historical use of blood tests for determining paternity. Given the way blood type is genetically transmitted, in some cases it is possible to conclusively exclude a person as a child's genetic father.²⁵⁸ However, in several high-profile cases—most notably one involving Charlie Chaplin—juries found paternity in the face of such tests, and appellate courts upheld them.²⁵⁹ The ensuing outcry resulted in the Uniform Act on Blood Tests to Determine Paternity (“UABT”), which stated:

Section 4. *Effect of Test Results.* If the court finds that the conclusions of all the experts, as disclosed by the evidence based upon the tests, are that the alleged father is not the father of the child, the question of paternity shall be resolved accordingly. If the experts disagree in their findings or conclusions, the question shall be submitted upon all the evidence.²⁶⁰

The UABT remains the law in several states today, although DNA testing has largely superseded it.²⁶¹

The UABT again demonstrates that deference to science is not foreign or alien to the legal system. The debates over paternity tests illustrate the continuing tension between independent factfinding and deference to expertise. The appellate courts who upheld those jury findings of paternity worried deeply about contradicting established science, yet ultimately defended the jury's prerogative.²⁶² The commissioners that promulgated the Uniform Act and the legislatures that ultimately adopted it clearly thought differently.

258. The genes for A and B are codominant, while the gene for O is recessive. Thus, for example, someone with A blood type has a genotype of either AA or AO, whereas someone with O blood type must have genotype OO. If a child is type B, and the mother is type A, a man who is type O cannot be the child's genetic father. *ABO Blood Groups: Predicting the Blood Type of Your Children*, UNIV. ARIZ. BIOLOGY PROJECT (Aug. 26, 1997), biology.arizona.edu/human_bio/ABO_Crosses.html [<https://perma.cc/Y4W6-XSWM>].

259. *Berry v. Chaplin*, 169 P.2d 442, 451–52 (Cal. Dist. Ct. App. 1946) (stating that blood tests were “not conclusive evidence”); *Jordan v. Davis*, 57 A.2d 209, 210–11 (Me. 1948).

260. UNIF. ACT ON BLOOD TESTS TO DETERMINE PATERNITY § 4 (NAT'L CONF. OF COMM'RS ON UNIF. STATE L. 1952); *see also* NAT'L CONF. OF COMM'RS ON UNIF. STATE L., PROCEEDINGS IN COMMITTEE OF THE WHOLE: UNIFORM BLOOD TESTS AS EVIDENCE OF PATERNITY ACT 1, 2–3 (Sept. 14, 1951) [hereinafter COMM. PROCEEDINGS] (describing the concerns created by the *Chaplin* case).

261. *See, e.g.*, LA. STAT. ANN. § 9:397.3 (2021); N.H. REV. STAT. ANN. § 522:4 (2021); OR. REV. STAT. § 109.258 (2021); 23 PA. CONS. STAT. § 5104 (2021). *Compare* CAL. FAM. CODE § 7554 (West 2016) (containing the Uniform Act on Blood Tests), *with* CAL. FAM. CODE § 7554 (West 2019) (replacing discussion of blood testing with genetic testing).

262. *E.g., Jordan*, 57 A.2d at 210:

[We do not] propose to lay down as a rule of law that the triers of fact may reject what science says is true; for to do so would be to invite at some future time a conflict between scientific truth and stare decisis and in that contest the result could never be in doubt. . . . But the application of scientific principles to the facts of a particular case . . . still remains the province of the court.

In some ways, the UABT represents a more extreme application of the Consensus Rule. It requires unanimity among the experts and elevates the test conclusion to a matter of law, which perhaps makes it more akin to judicial notice.²⁶³ Nonetheless, the widespread use and acceptance of blood typing tests along with the simplicity of the paternity inference makes such demands easy to meet.²⁶⁴ The Consensus Rule may thus be an extension of the ideas in the UABT, but only slightly so.²⁶⁵

V. IMPLEMENTATION EXAMPLES

Throughout our theoretical discussion about the Consensus Rule, there have been hints about how it would apply in specific situations. This Part brings everything together and briefly illustrates the use of the Consensus Rule in three contexts.

A. Toxic Torts

Perhaps the most straightforward context is proof of general causation in toxic torts. Indeed, this article has used toxic torts as its implicit example throughout, so we will only briefly review this context.

Under the Consensus Rule, experts no longer offer their personal opinions on causation or teach the jury how to assess the underlying studies. Instead, their testimony focuses on what the expert community as a whole believes about causation. If consensus statements or meta-analyses exist, then the parties will surely rely heavily on them. At the same time, judges do not gatekeep the substantive reliability of the scientific studies as they do under *Daubert*. Judges may of course check whether the testifying experts are adequately familiar with the relevant expert community, but otherwise all of the evidence on community belief goes to the jury, who is epistemically competent to assess it.

Even when no expert consensus exists, the Consensus Rule still achieves an important shift in perspective. Since the attorneys and experts make deference-type arguments, the jury picks from positions prevalent among members of the expert community, rather than

263. See A. Frederick Harris, *Some Observations on the Un-Uniform Act on Blood Tests to Determine Paternity*, 9 VILL. L. REV. 59, 68 (1963) (characterizing the Uniform Act as creating judicial notice for these tests, even though “these are not traditional judicial notice situations”).

264. Cf. *Ross v. Marx*, 90 A.2d 545, 546 (N.J. Essex Cnty. Ct. 1952) (“For a court to declare that these tests are not conclusive would be as unrealistic as it would be for a court to declare that the world is flat.”), *aff’d*, 93 A.2d 597 (N.J. Super. Ct. App. Div. 1952).

265. In debating the UABT, the commissioners also worried about the problem of faulty tests. COMM. PROCEEDINGS, *supra* note 260, at 6–8.

deferring to an individual expert or striking off on its own. The resulting outcomes are therefore more defensible and less likely to go astray.

Motions practice also becomes more honest. The Consensus Rule eliminates disingenuous *Daubert* motions trying to assert what evidence is reliable and what is not. Instead, sufficiency motions take issues away from juries only when no reasonable jury could conclude that the scientific community believed otherwise. Even more importantly, appellate courts review that determination de novo, and if the consensus is obvious, then the appellate court can set precedent, creating efficiencies for future cases. That precedent is subject to future overruling if the consensus changes.²⁶⁶

B. Social Science Facts

A growing feature in modern litigation is the use of social science evidence to provide background or contextual information. For example, a party may wish to offer a psychologist to discuss the unreliability of certain types of eyewitness identification.²⁶⁷ The Consensus Rule provides a convenient structure for incorporating this information into a case. If the relevant expert community has established certain social scientific facts, then the Consensus Rule asks the factfinder to treat those facts as established. For example, psychological studies have long shown that witness confidence is not correlated with reliability, and that cross-racial identifications are less reliable than intraracial identifications.²⁶⁸ Under the Consensus Rule, a jury would take these facts as given.

In a sense, this result mirrors what some courts have ultimately done in the eyewitness reliability context. For example, in *State v. Henderson*,²⁶⁹ the New Jersey Supreme Court held that trial courts should provide enhanced instructions informing jurors about the dangers of eyewitness identification based on the available social

266. One may worry about the stickiness of precedent, but, given that scientific consensus once established tends to change slowly, the timetables between law and science may not differ too much on average. See Ben K. Grunwald, *Suboptimal Social Science and Judicial Precedent*, 161 U. PA. L. REV. 1409, 1434 (2013) (“[T]he slow evolution of social science knowledge sharply limits the need to revise precedent frequently.”).

267. *E.g.*, *State v. Guilbert*, 49 A.3d 705, 715 (Conn. 2012) (holding that such testimony does not invade the province of the jury).

268. *E.g.*, Sheri Lynn Johnson, *Cross-Racial Identification Errors in Criminal Cases*, 69 CORNELL L. REV. 934, 942 (1984).

269. 27 A.3d 872 (N.J. 2011).

science.²⁷⁰ What the *Henderson* court did in a pathbreaking opinion, however, is accomplished by the Consensus Rule as a matter of course.

Notably, the jury remains free to do what it likes with the available social science. In the main, the social science literature only makes claims at the general population level. Social scientists do not claim to be able to determine the reliability of a specific eyewitness identification. As such, the question whether a particular witness is reliable is appropriately left to the jury, since there is no scientific consensus on that question.

Finally, the ability of courts to establish precedents recognizing generally accepted social scientific truths under the Consensus Rule parallels John Monahan and Laurens Walker's insightful proposal regarding social frameworks.²⁷¹ They argue that courts should treat general social science facts such as the reliability of eyewitness identification like legal precedent.²⁷² The Consensus Rule conceptually approaches the problem in a far different way, but the net effect, once there is a consensus, is nearly the same.

C. Forensic Science

One of the most controversial applications of the Consensus Rule may be the forensics context. In recent times, commentators have harshly criticized the forensics community for failing to develop reliable and scientifically defensible forensic techniques.²⁷³ The Consensus Rule seems to defer to these much maligned expert communities, rather than providing an engine for reform. Yet, much as reformers might not like its slow-moving conservatism, we can strongly argue that the way the Consensus Rule handles the forensics problem is correct. To see this, we need to break down the issue of forensic reliability into its several eras.

1. Pre-criticism Period

The Consensus Rule would have done little to stop the historical use of forensics in courts. In the absence of an active controversy, the relevant expert community's beliefs control, and so handwriting, fingerprinting, and even bitemark experts would have gone historically

270. *Id.* at 924–25 (charging committee to develop model jury instructions on eyewitness identifications).

271. See Laurens Walker & John Monahan, *Social Frameworks: A New Use of Social Science in Law*, 73 VA. L. REV. 559, 560 (1987).

272. *Id.* at 585–87.

273. See, e.g., Faigman et al., *supra* note 231, at 438.

unchecked. But to criticize the Consensus Rule on this ground would amount to hindsight bias. For one thing, none of the then-existing admissibility frameworks did any better. For another, it is not clear that courts can be blamed for an issue (forensic unreliability) that no one knew about at the time. Courts are not equipped to do research, nor are lawyers equipped to find scientific flaws. If the blame rests with anyone, it rests with the relevant expert communities, or perhaps researchers from related fields who did not sound the alarm sooner.

2. Early Criticism

The Consensus Rule would also have ignored early pathbreaking criticism of the forensic community. For example, Michael Risinger, Michael Saks, and Mark Denbeaux's classic 1989 article criticizing forensic document examination would have been insufficient to cause the Consensus Rule to start rejecting handwriting experts.²⁷⁴ This result is more troubling, but arguably not much more so. To start, with the exception of extraordinary cases,²⁷⁵ the full *Daubert* framework has done little better in practice. While *Daubert's* nondeferential posture *theoretically* offers greater opportunities for successful challenges, in reality it has not. Indeed, laments about the lack of rigorous gatekeeping in forensics are now a popular handwringing exercise.²⁷⁶

It is also entirely unclear why we should prefer a different result. As this Article has stressed repeatedly, as lay decisionmakers, judges cannot tell whether the critics are correct. Risinger and his colleagues were after all law and psychology professors and not handwriting examiners.²⁷⁷ External criticism is doubtless important for sparking changes in long-entrenched fields, but outside critics can also miss important operational or practical considerations. History may have shown us that they were right, but mavericks are not always, so prudence suggests that courts should wait for the movement to build.

3. Emerging New Consensus

What is the current situation surrounding forensic analyses like handwriting? Arguably, it is dissensus with an emerging new

274. See Risinger et al., *supra* note 10, at 780 (stating that “[a] lot of unvalidated nonsense is allowed into court”).

275. See, e.g., *United States v. Hines*, 55 F. Supp. 2d 62, 67–68 (D. Mass. 1999) (limiting the testimony of the handwriting expert).

276. See, e.g., Aliza B. Kaplan & Janis C. Puracal, *It's Not a Match: Why the Law Can't Let Go of Junk Science*, 81 ALB. L. REV. 895, 926–27 (2017) (describing the courts' failure to reject forensic evidence).

277. Risinger et al., *supra* note 10, at 731.

consensus. Although dissensus probably occurred prior to its release, the 2009 National Research Council (“NRC”) report questioning the practices of the forensic community proclaimed an active controversy in this area.²⁷⁸ The 2016 report of the President’s Council of Advisors on Science and Technology (“PCAST”) further confirmed it.²⁷⁹ In this case, the split arose externally, with members of the broader scientific community raising objections to the methods used by traditionalists. But regardless, under the Consensus Rule, the traditional forensic community is therefore no longer entitled to deference from the courts.²⁸⁰

There are also facets of an emerging new consensus. To the extent that certain forensic communities have begun to adopt recommendations from the NRC and PCAST reports and have incorporated them into their accreditation standards, those standards are now part of what the relevant expert community does. Analyses done in accord with those accreditation standards represent the views of the community and are entitled to deference; analyses not done in accord with those standards are not.

Is this enough? Should not the courts simply exclude traditional forensic evidence? For now, the Consensus Rule suggests no. Just because many in the evidence community think that the criticisms are right does not mean that we necessarily want judges to choose between the expert communities. In the absence of consensus, the decision is the jury’s. The task of reformers remains to persuade and convince the forensic community of their position. The court’s job under the Consensus Rule is not to police the truth of expert conclusions; the court’s job is to determine what the relevant experts think.

CONCLUSION

Founded on good intentions but unrealistic expectations, the *Daubert* framework should be scrapped. It invites dilettantism, asking lay judges and jurors to learn just enough about an area of expertise in

278. NAT’L RSCH. COUNCIL, *supra* note 224, at 4–9.

279. PRESIDENT’S COUNCIL OF ADVISORS ON SCI. & TECH., EXEC. OFF. OF THE PRESIDENT, FORENSIC SCIENCE IN CRIMINAL COURTS: ENSURING SCIENTIFIC VALIDITY OF FEATURE-COMPARISON METHODS 1, 45 (Sept. 2016), [obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf](https://perma.cc/9AP8-28JL) [<https://perma.cc/9AP8-28JL>].

280. In practice, courts may face disputes about whether a particular external group is a relevant expert community. Resolving that kind of dispute again requires judgment and would have to be dealt with on a case-by-case basis. One suspects, however, that regardless of their original source, valid criticisms will over time persuade a growing faction of in-group members. Once that minority becomes large enough, courts can take notice.

a short period of time to be dangerous. It focuses on individual experts, who in an adversarial system inevitably disagree and generate the expert paradox. And it entertains maverick ideas—in the hollow hope of getting things right, but at considerable risk of getting things wrong.

Long before *Daubert* gatekeeping, the evidence scholar Edmund Morgan argued that two factors should influence the formation of evidence rules: (i) the “competence or lack of competence of the tribunal”; and (ii) “the means by which and the extent to which sources of information are made available to it.”²⁸¹ In this Article, I have tried to follow Morgan’s sage advice in developing the Consensus Rule. The Consensus Rule confronts the age-old problem of lay decisionmakers who must answer questions involving expertise. It also recognizes that the most reliable source of information is the expert community, not individual experts, and certainly not the independent judgments of the lay decisionmakers. The answer to the expert evidence problem is to abandon the gatekeeping approach of *Daubert* and to adopt the inference rule approach of the Consensus Rule. If the relevant expert community believes a specialized fact, then the factfinder should proceed accordingly. That inference rule acknowledges the limitations and constraints under which the legal system operates and takes advantage of the specialization and expertise that makes the rest of society successful.

Developing and proposing the Consensus Rule as an alternative to *Daubert*, however, is only the beginning. Looking forward, we need additional research on several empirical questions raised in this Article. One question is whether judges and jurors, despite the formal *Daubert* framework, already impose something akin to the Consensus Rule in practice out of necessity.²⁸² Studies show that “general acceptance” predicts *Daubert* decisions by judges²⁸³ and influences lay belief on scientific questions.²⁸⁴ Might the Consensus Rule actually better describe the law in practice than *Daubert*?

281. Morgan, *supra* note 80, at 248.

282. Thanks to Judge John Lee for suggesting this idea. See Dan M. Kahan, Hank Jenkins-Smith & Donald Braman, *Cultural Cognition of Scientific Consensus*, 14 J. RISK RSCH. 147, 149 (2011) (hoping that “the need . . . for expert guidance would cause [laypersons] to gravitate toward the consensus positions among scientists”).

283. See LLOYD DIXON & BRIAN GILL, CHANGES IN THE STANDARDS FOR ADMITTING EXPERT EVIDENCE IN FEDERAL CIVIL CASES SINCE THE *DAUBERT* DECISION 41–45 (2001), https://www.rand.org/pubs/monograph_reports/MR1439.html [<https://perma.cc/XL2Y-BTL5>] (showing general acceptance’s correlation to admissibility); see also Gatowski et al., *supra* note 29, at 444–48 (reporting survey in which judges best understood general acceptance among the *Daubert* factors, and many said they would give it the most weight).

284. See Johnson, *supra* note 193, at 606–07.

Another question is what in fact is the best strategy for a layperson making decisions involving expert knowledge. Recall that Part II reasoned that the best strategy was likely deference to the expert community. Good reasoning may lead to good outcomes most of the time—an assumption dubbed the Aristotelian Principle²⁸⁵—so in the absence of empirical evidence, good reasoning is a safe bet. But it would be nice to have some confirmatory evidence, perhaps through a future vignette study, that a deference approach is empirically superior to an education one.²⁸⁶

Beyond empirical questions, our discussion of the Consensus Rule also raises several important theoretical questions for the future. The Consensus Rule is a rule of inference, not a rule of admissibility. Rather than primarily focusing on admissibility rules, as it long has, should evidence law focus on alternative ways to improve inference and factfinding?

More broadly, can we apply the lessons of the Consensus Rule, which we developed for the legal context, to how laypersons generally interact with scientific and expert knowledge? In our everyday interactions with experts—when we seek medical care, car and home repair, financial planning, and even information for voting on policy questions—can the Consensus Rule help? For each context, the stakes and the constraints will differ, so the specific details may change. But the Consensus Rule suggests that the fundamental question should remain the same: How would the relevant expert community answer this question?

285. MICHAEL A. BISHOP & J.D. TROUT, EPISTEMOLOGY AND THE PSYCHOLOGY OF HUMAN JUDGMENT 20 (2005) (“The Aristotelian Principle says simply that *in the long run, poor reasoning tends to lead to worse outcomes than good reasoning*. So the Aristotelian Principle allows us to empirically determine—though not with complete certainty—when one way of reasoning is better than another.”).

286. The psychological literature on “transformative experiences,” a philosophical problem made famous in L.A. PAUL, TRANSFORMATIVE EXPERIENCE 17 (2014), may suggest the superiority of deference over education. We can pose the paradoxical question in the following way: We would like to decide whether to undergo a transformative experience. The problem is that because it is “transformative,” by definition we cannot imagine what the outcome of that experience will be like. *Id.* at 17 (explaining how one “cannot rationally choose to have the experience” nor “to avoid it, to the extent that [one’s] choice is based on [their] assessments of what the experience would be like”). So how do we decide? The answer may be to rely on the reports of others who have undergone the experience. Psychologists have shown that relying on such reports is a better predictor of outcomes than trying to imagine the outcome independently, and, in accordance with the concerns we raised about safety valves, those studies further show that using both (reports and independent imagination) results in worse predictions. See Emma Walsh & Peter Ayton, *My Imagination Versus Your Feelings: Can Personal Affective Forecasts Be Improved by Knowing Other People’s Emotions?*, 15 J. EXPERIMENTAL PSYCH. 351, 359 (2009); see also Daniel T. Gilbert, Matthew A. Killingsworth, Rebecca N. Eyre & Timothy D. Wilson, *The Surprising Power of Neighborly Advice*, 323 SCIENCE 1617, 1619 (2009) (showing that a peer’s report about an outcome is more predictive than an individual’s own prediction).

Whether in court or in everyday life, the Consensus Rule teaches important lessons: The need for intellectual humility and the limitations of our nonexpert judgment on factual questions; the importance of not deferring on value-laden questions; the need to trust experts as a source of information, but only as representatives of a broader expert community. Specialization and expertise lie at the core of modern society, and so we will often be both the layperson and the confused and overwhelmed decisionmaker. The Consensus Rule makes that unenviable yet inevitable position just a bit less daunting.