

9-15-2020

Having Your Cake and Eating It, Too: Using Special Masters in Daubert Hearings to Promote Scientific Analyses of Expert Testimony

Luis Balart

Follow this and additional works at: <https://digitalcommons.law.lsu.edu/lalrev>

Repository Citation

Luis Balart, *Having Your Cake and Eating It, Too: Using Special Masters in Daubert Hearings to Promote Scientific Analyses of Expert Testimony*, 80 La. L. Rev. (2020)

Available at: <https://digitalcommons.law.lsu.edu/lalrev/vol80/iss3/10>

This Comment is brought to you for free and open access by the Law Reviews and Journals at LSU Law Digital Commons. It has been accepted for inclusion in Louisiana Law Review by an authorized editor of LSU Law Digital Commons. For more information, please contact kreed25@lsu.edu.

Having Your Cake and Eating It, Too: Using Special Masters in *Daubert* Hearings to Promote Scientific Analyses of Expert Testimony

Luis Balart*

TABLE OF CONTENTS

Introduction	848
I. Judges' Difficult Roles Regarding Expert Testimony and Claim Construction.....	851
A. The <i>Frye</i> Test.....	851
1. Criticisms of <i>Frye</i>	852
B. The <i>Daubert</i> Test.....	854
1. Criticisms of <i>Daubert</i>	858
II. Proposed Solutions to the Difficulties Regarding Technical and Scientific Issues	861
A. Court-Appointed Experts.....	861
B. Informal Advisors.....	864
C. Special Masters.....	866
III. Special Masters Are the Best Way to Increase the Accuracy of Admissibility Determinations in <i>Daubert</i> Hearings	868
A. Current Use of Special Masters	868
B. How Appointment of a Special Master Should Work	870
C. Lessons from Claim Construction	872
IV. Counterarguments to Special Masters in <i>Daubert</i> Hearings	874
A. Special Masters Increase Costs.....	874
1. Time-Spent Allocation.....	875
2. Equitable Allocation.....	876
3. Proportionality as Incentive to Play Nice.....	877
B. Ensuring Neutrality of Special Masters	879
Conclusion.....	882

Copyright 2020, by LUIS BALART.

* I would like to thank the Volume 79 Board of Editors and Professor Margaret Thomas for assisting me throughout the writing process. I would also like to thank the members of the Volume 80 Board of Editors for their thorough editing. Finally, I'd like to thank my family and Alex for their support.

INTRODUCTION

Dewayne Johnson, a 46-year-old school groundskeeper, had used the popular weed killer Roundup since 2012.¹ Several years after Johnson began using Roundup, his doctors diagnosed the father of three with mycosis fungoides, a form of non-Hodgkin's lymphoma.² Johnson sued Monsanto, the manufacturer of Roundup.³ Although doctors told Johnson he likely would not live to see the end of the trial, Johnson was in court on June 18, 2018, when the jury returned a \$289 million verdict in his favor.⁴ The outcome of the trial hinged on whether Roundup is carcinogenic to humans, and both the plaintiff's attorney and the defendant's attorney presented scientific evidence on the issue.⁵ Monsanto claims that Johnson introduced "junk science" meant to "inflamm[e]" the jury and plans to appeal on the grounds that the judge should have excluded the evidence.⁶ Monsanto faces 5,000 similar lawsuits nationwide.⁷ The outcome of Monsanto's appeal in *Johnson v. Monsanto Co.* and the thousands of cases pending nationwide will depend on whether the trial judges allow the introduction of the plaintiffs' scientific experts' testimony. Future decisions could cost Monsanto hundreds of millions of dollars.⁸

1. Sam Levin & Patrick Greenfield, *Monsanto Ordered to Pay \$289m as Jury Rules Weedkiller Caused Man's Cancer*, GUARDIAN (Aug. 10, 2018), <https://www.theguardian.com/business/2018/aug/10/monsanto-trial-cancer-dewayne-johnson-ruling> [<https://perma.cc/F6LC-YX7N>].

2. *Id.*

3. *Id.*

4. *Johnson v. Monsanto Co.*, 190, CGC-16-550128, 2018 WL 4409024 (Cal. Super. Jun. 18, 2018); Note that although California uses a modified version of the *Frye* test, this example still shows that whether scientific evidence is admitted is critical for the outcome of trials, which can result in massive damage awards. Regardless, the *Frye* test requires judges to make determinations as to scientific validity, and many of the thousands of suits pending will be in jurisdictions that follow *Daubert*.

5. Levin & Greenfield, *supra* note 1.

6. Tina Bellon, *Monsanto Roundup Appeal Has Uphill Climb on 'Junk Science' Grounds: Legal Experts*, REUTERS (Aug. 14, 2018, 4:29 pm), <https://www.reuters.com/article/us-monsanto-cancer-lawsuit-analysis/monsanto-roundup-appeal-has-uphill-climb-on-junk-science-grounds-legal-experts-idUSKBN1KZ2EW> [<https://perma.cc/HQ36-C686>].

7. *Id.*

8. *See Johnson*, 2018 WL 4409024.

Courts and commentators have struggled for decades to articulate standards for the admissibility of scientific evidence.⁹ At times, a case turns on whether the judge admits a particular piece of evidence, as in *Johnson v. Monsanto Co.*¹⁰ In *Johnson*, the trial judge allowed the expert testimony of oncologist Dr. Nabhan, who testified to the cause of Johnson's illness.¹¹ In denying Monsanto's motion for judgment notwithstanding the verdict,¹² the court briefly touched on the admissibility of Dr. Nabhan's expert testimony regarding his differential diagnosis.¹³ Using a differential diagnosis, Dr. Nabhan concluded that Johnson's exposure to Roundup was likely a substantial factor in his developing cancer.¹⁴ Dr. Nabhan's expert testimony was a central issue in the case, so it likely influenced the jury's decision to find Monsanto liable.¹⁵

Since expert testimony regarding scientific evidence can be pivotal in a trial, it is important that only scientifically valid evidence enters the courtroom.¹⁶ The task of determining the admissibility of scientific evidence naturally falls on the trial judge because the admissibility of evidence is a legal issue rather than a factual one.¹⁷ Frequently, the scientific complexities are beyond the comprehension of our legal

9. See Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40 (1901) (discussing the issues that expert testimony presents).

10. Leah Vickers, Daubert, *Critique and Interpretation: What Empirical Studies Tell Us About the Application of Daubert*, 40 U.S.F. L. REV. 109, 127 (2005) (stating that judges granted motions for summary judgment far more often after *Daubert*, and 90% were against plaintiffs).

11. *Johnson v. Monsanto Co.*, No. CGC-16-550128, 2018 WL 5246323, at *2 (Cal. Super. Oct. 22, 2018).

12. "Judgment notwithstanding the verdict. A judgment entered for one party even though a jury verdict has been rendered for the opposing party." *Judgment Notwithstanding the Verdict*, BLACK'S LAW DICTIONARY (10th ed. 2014).

13. *Johnson*, 2018 WL 5246323, at *2. When conducting a differential diagnosis, a doctor begins by "ruling in" all possible causes of the patient's ailment and then rules out all of the possible causes until the doctor is left with the most likely cause. *Id.*

14. *Id.*

15. *Id.*

16. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993).

17. FED. R. EVID. 702 (2018); *id.* 104(a); *Daubert*, 509 U.S. at 589 (rejecting *Frye*'s general acceptance test as the standard but concluding that the trial judge must ensure the proffered evidence is reliable).

system's generalist judges.¹⁸ Therefore, judges may turn to several procedural mechanisms for help with difficult technical and scientific questions.¹⁹

This Comment explores judges' use of court-appointed experts, informal advisors, and special masters to aid in making evidentiary decisions that require technical or scientific knowledge. This Comment argues that in the context of *Daubert* hearings, judges should appoint Federal Rules of Civil Procedure Rule 53 ("FRCP 53") special masters with greater frequency and that changes should be made either jurisprudentially or through legislation to allow for their increased use.²⁰ Part I of this Comment evaluates the former standard for admissibility of expert testimony in federal courts under *Frye*²¹ and the current standard under *Daubert*.²² Additionally, Part I explores some criticisms of *Frye* and *Daubert* and examines the high degree of scientific sophistication required to perform a *Daubert* analysis. Part II evaluates proposed solutions to the inherent difficulties that occur when generalist judges make determinations based on scientific principles in the *Daubert* hearing context. Part III of this Comment proposes that special masters are the ideal procedural tool for judges seeking help with *Daubert* analyses and examines lessons from patent law to support that conclusion. Part IV demonstrates that increased use of special masters will lead to a negligible increase in cost for litigants and that special masters are less likely to be biased than court-appointed experts and informal advisors.

18. John W. Wesley, *Scientific Evidence and the Question of Judicial Capacity*, 25 WM. & MARY L. REV. 675, 686 (1984) (stating that "[t]rial judges are trained in the law and rarely have a technical background. Accordingly, the trial judge also may fail to fully comprehend complex scientific evidence.").

19. FED. R. EVID. 706; FED. R. CIV. P. 53 (2018); *Reilly v. United States*, 863 F.2d 149, 155 (1st Cir. 1988) (reiterating the inherent authority of courts to appoint informal advisors).

20. Simply put, special masters are individuals who judges may appoint to perform a variety of functions, including pre-trial functions such as *Daubert* and *Markman* hearings.

21. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923) (holding that the test for the admissibility of scientific evidence is whether the methodology underlying the conclusion has been met with general acceptance by the members of the relevant scientific field).

22. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) (holding that FRE 702 overrules *Frye* and enshrining the *Daubert* factors and the judge's gatekeeper duty).

I. JUDGES' DIFFICULT ROLES REGARDING EXPERT TESTIMONY AND CLAIM CONSTRUCTION

In 1901, Judge Learned Hand wrote, “No one will deny that the law should in some way use expert knowledge where it will aid in settling disputes. The only question is how to do it best.”²³ Science has progressed exponentially since the turn of the 20th century, and modern judges still face the same problems concerning the admissibility of scientific evidence that their predecessors did.

A. *The Frye Test*

Expert testimony concerns “a scientific, technical, professional, or other specialized issue given by a person qualified to testify because of familiarity with the subject or special training in the field.”²⁴ In other words, expert testimony concerns topics laypeople generally have trouble understanding. Parties retain experts to help the fact-finder understand factual issues “outside the realm of common experience.”²⁵ For example, an economist may testify about a disabled plaintiff’s future lost wages.²⁶ Similarly, a doctor may testify that exposure to the defendant’s drug caused the plaintiff’s birth defects.²⁷ Before the fact-finder can hear the expert testimony, the judge must first determine that the testimony is reliable enough to be admitted into evidence.²⁸ The first universally applied test for the admissibility of expert testimony was the *Frye* test.

Under *Frye*, the judge performs a two-part analysis.²⁹ First, the judge identifies the field of the underlying scientific principle or methodology; second, the judge determines whether that principle “has been generally accepted by members of that field.”³⁰ The *Frye* test assumes that scientists are best equipped to determine what constitutes valid scientific

23. Hand, *supra* note 9, at 40.

24. *Expert Evidence*, BLACK’S LAW DICTIONARY (10th ed. 2014).

25. Carol Kelly, *Utilizing Experts in Litigation*, MOTOR VEHICLE TORTS MASS. CONTINUING LEGAL EDUC. § 10.2 (2016).

26. *Richard v. Artigue*, 87 So. 3d 997, 1004 (La. Ct. App. 3rd Cir. 2012) (discussing two expert witness economists’ differing estimates of future lost wages).

27. *Daubert*, 509 U.S. at 583.

28. *Id.* at 589.

29. Jay Kesan, *Note, An Autopsy of Scientific Evidence in a Post-Daubert World*, 84 GEO. L.J. 1985, 1990 (1996).

30. *Id.*

methodology.³¹ As such, the scientific community as a whole determines admissibility.³² The implicit understanding is that judges are less equipped than scientists to assess the validity of scientific methodology because most judges lack training in a scientific discipline.³³ *Frye* makes the judge's job relatively easy because it does not require any scientific analysis of the scientific methodology.³⁴ The judge simply relies on the parties' presentations of expert opinions in the relevant field to determine whether the evidence is admissible.³⁵ Many scholars criticize *Frye* as an imprecise standard for admissibility.

1. Criticisms of *Frye*

The *Frye* test suffers from vagueness and malleability. *Frye* provided neither guidance on how to determine the breadth of a "relevant scientific field," nor guidance on what constituted "general acceptance."³⁶ The test's inherent vagueness allowed judges to include evidence by contracting the relevant scientific field to artificially create general acceptance.³⁷ Conversely, judges wishing to exclude evidence could broaden the scope of the relevant scientific field to ensure the methodology or principle did not obtain general acceptance because of the additional, possibly irrelevant opinions of scientists who were on the fringes of the broadly defined relevant field.³⁸ Moreover, judges could define "general acceptance" in a way that excluded the proffered evidence by requiring a majority or supermajority of the relevant scientific field to agree with the methodology.³⁹ Perhaps the most poignant critique of the *Frye* standard was that it lagged behind scientific advances.⁴⁰ The general acceptance

31. Michael C. Polentz, *Post-Daubert Confusion with Expert Testimony*, 36 SANTA CLARA L. REV. 1187, 1190 (1996).

32. *United States v. Addison*, 498 F.2d 741, 743–44 (D.C. Cir. 1974) ("The requirement of general acceptance in the scientific community assures those most qualified to assess the general validity of a scientific method will have the determinative voice.").

33. *Kesan*, *supra* note 29, at 1989–91.

34. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923); *Addison*, 498 F.2d at 743–44.

35. *Addison*, 498 F.2d at 744.

36. *Kesan*, *supra* note 29 at 1991; *see also* Paul C. Gianneli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, A Half-Century Later*, 80 COLUM. L. REV. 1197 1209–1213 (1980).

37. *Kesan*, *supra* note 29, at 1991; *see also* Gianneli, *supra* note 36, at 1209–13.

38. *Kesan*, *supra* note 29, at 1991.

39. *Id.* at 1990.

40. *Id.*; *see also* Gianneli, *supra* note 36, at 1209–13.

prong prevented nuanced, but scientifically sound, evidence from being heard by the jury because the relevant scientific community may not have had a chance to fully examine a new technique.⁴¹ Despite the *Frye* test's drawbacks, it was the uncontested standard for the admissibility of scientific evidence in federal courts from 1923 until the enactment of the Federal Rules of Evidence (FRE) in 1975.⁴²

The FRE governs the presentation of evidence in all actions in federal court.⁴³ Congress enacted the FRE in 1975, and the debates leading up to its adoption made little mention of *Frye*.⁴⁴ Characteristic of the FRE is its "liberal thrust,"⁴⁵ which leans toward the admission of evidence.⁴⁶ The liberal attitude of the FRE toward evidence was at odds with the stringent requirements of *Frye*.⁴⁷ Federal Rules of Evidence Rule 702 ("FRE 702") contains the provisions for the admissibility of expert witness testimony.⁴⁸ When Congress enacted the FRE, FRE 702 only required that the expert be qualified.⁴⁹ The current version of FRE 702 specifically states that the judge should admit the proffered expert testimony if it passes several reliability criteria and "will help the trier of fact."⁵⁰ The United States Supreme Court described the helpfulness standard as the requirement of a "fit" between the proffered testimony and fact at issue.⁵¹ Commentators and courts quickly began debating whether *Frye* survived the enactment of FRE 702.⁵²

41. Kesan, *supra* note 29, at 1990; *see also* Gianneli, *supra* note 36, at 1209–13.

42. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 587–90 (1993) (discussing the effect of the FRE on the *Frye* standard).

43. FED. R. EVID. 101 (2018).

44. Gianneli, *supra* note 36, at 2000–01.

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

46. FED. R. EVID. 401; *id.* 702.

47. *Daubert*, 509 U.S. at 588; Troy M. Horton, *The Debate is Over: Frye Lives No More*, 19 T. MARSHALL L. REV. 379, 380 (1994) (introducing *Frye*, FRE 702, and *Daubert*).

48. FED. R. EVID. 702.

49. *Id.* An expert is considered qualified and can offer expert testimony when the proffering attorney demonstrates that the expert and the testimony conform to the admissibility test the court uses. *Id.*

50. *Id.*

51. *Daubert*, 509 U.S. at 591 ("Rule 702's helpfulness standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility.").

52. *Compare* *United States v. Williams*, 583 F.2d 1194, 1198 (2d Cir. 1978) (rejecting *Frye* and using a reliability test, noting that "[a] determination of reliability cannot rest solely on a process of 'counting (scientific) noses'"), *with* *Christophersen v. Allied-Signal Corp.*, 939 F.2d 1106, 1110 (5th Cir. 1991) ("The

B. *The Daubert Test*

The United States Supreme Court answered that question with a resounding “no” in 1993 when it held in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, that FRE 702 superseded *Frye*.⁵³ The plaintiffs in *Daubert* alleged that Bendectin, an anti-nausea drug manufactured by Merrell Dow, caused serious birth defects in their infant children.⁵⁴ The trial court ruled that the plaintiff’s expert testimony⁵⁵ did not meet the *Frye* test and excluded the evidence, granting summary judgment to the defendants.⁵⁶ The Ninth Circuit affirmed.⁵⁷

The Supreme Court granted certiorari to determine the proper admissibility criteria for expert testimony.⁵⁸ After announcing that FRE 702 superseded *Frye*, the Court stated that FRE 702 did not allow all purportedly expert testimony and offered several non-exhaustive factors that judges could use to determine when expert testimony is reliable and thus admissible.⁵⁹ The Court established that a trial judge applying FRE 702 should act as a “gatekeeper” when determining whether evidence is admissible.⁶⁰

The determination of whether expert testimony is sufficiently reliable to be considered scientific knowledge, and thus admissible, focuses on the principles and methodology that the expert used to reach her conclusions, leaving the actual conclusions drawn from the scientific evidence for the

Federal Rules of Evidence, combined with *Frye* . . . provide a framework for trial judges struggling with proffered expert testimony.”).

53. *Daubert*, 509 U.S. at 589 (finding *Frye*’s general acceptance test “would be at odds with the ‘liberal thrust’ of the Federal Rules.”).

54. *Daubert*, 509 U.S. at 582.

55. These experts’ conclusions rested on the following: (1) evidence garnered from animal tests that tended to show a link between Bendectin and malformations; (2) pharmacological studies of Bendectin’s chemical structure that tended to show similarities between Bendectin’s chemical structure and those of other drugs that caused birth defects; and (3) reanalysis of previously published statistics based on human studies. *Id.* at 583.

56. *Id.* at 583–85.

57. *Id.*

58. *Id.* at 585.

59. *Id.* at 589–95. Although the list is non-exhaustive, and some courts—for example, the Ninth Circuit—have added a factor, for the sake of simplicity this Comment focuses on the factors enumerated in *Daubert*.

60. *Id.* at 592–93 (“The trial judge must determine at the outset, pursuant to Rule 104(a), whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue.”).

jury to analyze.⁶¹ The Court stated that the “gatekeeper” function has two prongs: reliability and relevance, which together create the *Daubert* admissibility analysis.⁶² First, the judge must determine whether the expert proposes to testify to “scientific knowledge.”⁶³ This first prong of the *Daubert* admissibility analysis depends on application of the *Daubert* factors.⁶⁴ The non-exhaustive list of factors the Court provided includes: (1) whether an expert could test or has tested the theory or technique; (2) whether experts in the field have peer-reviewed or published the theory or technique; (3) whether there is a well-known or potential rate of error and whether standards are in place that control the technique’s operation; and (4) whether the relevant scientific community generally accepts the theory or technique.⁶⁵ Even if the reliability prong is satisfied, the proffered testimony must still pass the relevancy prong. Relevant expert testimony assists the fact-finder in understanding or determining a factual issue, as measured by the “helpfulness” or “fit” standard.⁶⁶ Although *Daubert* held that FRE 702 superseded *Frye*, the Court imported the *Frye* standard into the *Daubert* factors via the general acceptance factor.⁶⁷ The transition from *Frye* to *Daubert* was a massive shift in determining expert testimony admissibility.

Courts and commentators quickly began evaluating the *Daubert* standard.⁶⁸ Some contended that *Daubert* made up for *Frye*’s shortcomings regarding the vagueness of what constitutes general acceptance and the relevant scientific field.⁶⁹ *Daubert* was supposed to be a more flexible standard than *Frye*, by which judges could admit novel scientific evidence that may not pass *Frye*’s general acceptance factor because of the time lapse between a new discovery and its general

61. Manuel L. Real, *Daubert—A Judge’s View—A Reprise*, SK042 A.L.I.—A.B.A. 447, 457 (2004) (discussing the proper method of performing the *Daubert* analysis).

62. *Daubert*, 509 U.S. at 590–92.

63. *Id.* (“The adjective ‘scientific’ implies a grounding in the methods and procedures of science. Similarly, the word ‘knowledge’ connotes more than subjective belief or unsupported speculation.”).

64. *Id.* at 592–96.

65. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999).

66. *Id.*

67. *Daubert*, 509 U.S. at 594.

68. *See generally*, Kesan, *supra* note 29; *Daubert v. Merrell Dow Pharm., Inc.* 43 F.3d 1311 (9th Cir. 1995).

69. *People v. Schreck*, 22 P.3d 68, 76 (2001) (citing scholarly work critical of the vagueness of the *Frye* test); Robert J. Goodwin, *Fifty Years of Frye in Alabama: The Continuing Debate over Adopting the Test Established in Daubert v. Merrell Dow Pharm., Inc.*, 35 CUMB. L. REV. 232, 282–88 (2005).

acceptance.⁷⁰ Additionally, some courts suggested that *Daubert* gives judges more authority to determine the admissibility of evidence because the decision diminished the authority of the scientific community by making the general acceptance factor one of several instead of determinative.⁷¹

Following *Daubert*, the Supreme Court granted certiorari in two other cases that, together with *Daubert*, comprise “The *Daubert* Trilogy.”⁷² The second case in the trilogy was *General Electric Co. v. Joiner*.⁷³ In *Joiner*, the plaintiff alleged that his work as an electrician on transformers that General Electric manufactured exposed him to polychlorinated biphenyls (“PCBs”),⁷⁴ which caused him to develop small cell lung cancer.⁷⁵ The plaintiff attempted to introduce expert testimony based on studies indicating that mice developed cancer after exposure to massive doses of PCBs.⁷⁶ The trial court, applying *Daubert*, ruled the evidence inadmissible on the basis that it was not relevant to proving whether the PCBs had more likely than not promoted the plaintiff’s lung cancer—meaning that the “fit” between studies on mice and applicability to humans was not close

70. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 142 (1997) (“Thus, while the Federal Rules of Evidence allow district courts to admit a somewhat broader range of scientific testimony than would have been admissible under *Frye*, they leave in place the ‘gatekeeper’ role of the trial judge in screening such evidence.”). *But see* Christina L. Studebaker et. al., *Judge and Attorney Experiences, Practices, and Concerns Regarding Expert Testimony in Federal Civil Trials*, 8 PSYCHOL. PUB. POL’Y & L. 309, 330 (suggesting judges apply stricter scrutiny to expert testimony under *Daubert* than they had under *Frye*).

71. *Taylor v. State*, 889 P.2d 319, 329–330 (Okla. Crim. App. 1995) (suggesting that the general acceptance standard amounted to judicial abdication).

72. *McClain v Metabolife Intern., Inc.*, 401 F.3d 1233, 1249 (11th Cir. 2005) (referencing the *Daubert* Trilogy).

73. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997) (holding that appellate courts must apply abuse of discretion review to *Daubert* determinations). The final case in the *Daubert* Trilogy, *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999), applies *Daubert* to not just scientific expert testimony, but expert testimony in general.

74. Polychlorinated Biphenyls, or PCBs, are widely considered dangerous to human health. Congress banned most production of PCBs in 1978. 15 U.S.C. § 2605(e)(2)(A).

75. *Joiner*, 522 U.S. 136, 139–41.

76. *Id.* at 144. The plaintiff’s proffered experts based this opinion on studies conducted on infant mice, wherein the researchers injected infant mice with high doses of PCBs to see if they developed cancer. Of course, the infant mice developed cancer; however, they developed alveogenic adenomas, whereas the plaintiff developed small cell carcinomas. *Id.*

enough.⁷⁷ The Eleventh Circuit reversed, holding that the testimony was admissible after conducting a de novo review of the trial court's *Daubert* analysis.⁷⁸ The Supreme Court reversed the Eleventh Circuit and held that the proper standard of review for *Daubert* analyses was abuse of discretion, not de novo.⁷⁹

Justice Breyer concurred in the result and wrote separately to emphasize the importance of getting the *Daubert* analysis right.⁸⁰ He noted it is "essential," particularly in toxic tort litigation, that the judge determining the admissibility of proffered scientific evidence make the correct determination.⁸¹ Furthermore, he argued that judges should seek the assistance of scientists when performing the gatekeeping function.⁸² Justice Breyer explicitly advocated the use of special masters and court-appointed experts in *Daubert* hearings to help judges handle difficult admissibility determinations requiring technical or scientific expertise.⁸³ Moreover, he noted: "Given this kind of cooperative effort, from the scientific to the legal community, and given the various Rules-authorized methods for facilitating the court's task, it seems to me that *Daubert*'s gatekeeping requirement will not prove inordinately difficult to implement."⁸⁴ Conversely, without "cooperative effort" between the scientific and legal communities, *Daubert*'s gatekeeping requirement could prove difficult to implement, which is exactly what has occurred.⁸⁵ Justice Breyer's concurrence harkens back to the majority opinion in *Daubert* in that both recognize the need for scientific expertise in making scientific evidentiary determinations.⁸⁶ Both opinions premise correct *Daubert* determinations on assistance from the scientific community.⁸⁷

77. *Joiner v. Gen. Elec. Co.*, 864 F.Supp. 1310, 1327 (N.D. Ga. 1994), *rev'd*, 78 F.3d 524 (11th Cir.1996), *rev'd*, 522 U.S. 136 (1997). Recall that *Daubert* requires the proffered testimony to be scientific and helpful to the trier of fact. The testimony in *Joiner* failed the latter prong. This Comment focuses on alternative methods of determining the first prong.

78. *Joiner v. Gen. Elec. Co.* 78 F.3d 524 (11th Cir. 1996), *rev'd*, 522 U.S. 136 (1997).

79. *Joiner*, 522 U.S. at 146–47.

80. *Id.* at 148–50 (Breyer, J., concurring).

81. *Id.* at 148–50.

82. *Id.* at 149–50.

83. *Id.* at 149.

84. *Id.* at 150.

85. See generally Sophia Gatowski et al., *Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-Daubert World*, 25 LAW & HUM. BEHAV. 433 (2001).

86. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 595 (1993).

87. *Id.*; *Joiner*, 522 U.S. at 149 (Breyer, J., concurring).

1. Criticisms of Daubert

Joiner established that appellate courts apply de novo review to *Daubert* analyses, but this application has exacerbated some of the problems with the doctrine. Justice Rehnquist concurred in part and dissented in part with the *Daubert* majority.⁸⁸ He agreed that FRE 702 superseded *Frye* but questioned the new role judges would assume.⁸⁹ Specifically, he lamented that judges would have to take on the role of “amateur scientists” to apply the *Daubert* factors and implied that this role may be difficult because judges are not usually trained in scientific disciplines.⁹⁰ Justice Blackmun, writing for the majority in *Daubert*, was cognizant of Justice Rehnquist’s concerns, as he wrote that judges “should also be mindful of other applicable rules,” citing Federal Rules of Evidence Rule 706 (“FRE 706”) regarding court-appointed experts as a means by which judges could better assess scientific methodology.⁹¹

Daubert suffers from several problems that all stem from the technical and scientific competency required to correctly apply the *Daubert* factors. First, *Daubert* requires judges to make assessments about scientific methodology using the *Daubert* factors, even though most judges are ill-equipped to make these assessments because judges are usually not trained in scientific disciplines.⁹² When *Daubert* returned to the Ninth Circuit on remand, the heading of the opinion in which the judge discussed the new *Daubert* requirements was titled “A Brave New World.”⁹³ The judge described the task as “daunting” and “complex” and asserted that it puts judges in an “uncomfortable” position.⁹⁴ Specifically, the judge lamented that trial judges must now make determinations as to the methodologies of scientists “though we are largely untrained in science and certainly no match for any of the witnesses whose testimony we are reviewing.”⁹⁵ The Ninth Circuit had strong doubts as to the judiciary’s ability to apply *Daubert*.

Daubert’s second problem emerged from the findings of a study by Dr. Sophia Gatowski, who found that judges have difficulty applying the

88. *Daubert*, 509 U.S. at 598 (Rehnquist, C.J., concurring in part and dissenting in part).

89. *Id.* at 601.

90. *Id.*

91. *Id.* at 595.

92. David Faigman, *Judges as Amateur Scientists Symposium: The Role of the Judge in the Twenty-First Century*, 86 B.U. L. REV. 1207, 1209–11 (2006).

93. *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311, 1315 (9th Cir. 1995).

94. *Id.*

95. *Id.* at 1316.

factors.⁹⁶ Gatowski surveyed 400 judges' understandings of the *Daubert* factors.⁹⁷ Of the surveyed judges, only 6% could articulate a scientific meaning of falsifiability, and 35% clearly indicated that they did not understand the scientific meaning of falsifiability.⁹⁸ The researchers also concluded that only 4% of the surveyed judges could articulate a scientific understanding of how to apply the concept of error rate, and 86% of responses indicated the judges' understandings were "questionable at best."⁹⁹ The judges fared far better in their understandings of the factors of peer review, publication, and general acceptance, with over 70% exhibiting a scientific understanding of the concepts.¹⁰⁰

Daubert's third problem came to light when the researchers asked the judges what the Supreme Court intended to accomplish.¹⁰¹ Of the judges who responded, 32% said the intent was to raise the threshold for admissibility of scientific evidence; 23% said the intent was to lower the threshold for the admissibility of scientific evidence; 36% said the intent was neither to raise nor lower the threshold for admissibility, but rather to articulate a framework for admissibility and to give judges the discretion to apply the guidelines as appropriate; and the remaining 11% were unsure.¹⁰² The study shows that judges may be confused as to what

96. Gatowski et al., *supra* note 85, at 433.

97. *Id.*

98. *Id.* at 444–45.

The susceptibility of a hypothesis, theory, view, etc. to being proved false. Using the scientific method, one seeks to establish a hypothesis that fits all or most of the known facts and then proceeds to attack that hypothesis at its weakest points by extracting from it predictions that can be shown to be false. The Supreme Court has endorsed falsifiability as important for courts in determining whether evidence is scientifically reliable.

Falsifiability, BLACK'S LAW DICTIONARY (10th ed. 2014).

99. Gatowski et al., *supra* note 85, at 444–45.

100. *Id.* at 447–48.

101. *Id.* at 443.

102. *Id.* The percentages provided are rounded for the sake of clarity. In fairness, this is not a simple question. If *Daubert* replaced *Frye* because "a rigid 'general acceptance' requirement [is] at odds with the 'liberal thrust' of the Federal Rules . . ." as the Supreme Court said, then it stands to reason that *Daubert* enshrined a more liberal standard. *Daubert v. Merrell Dow Pharm. Inc.*, 509 U.S. 573, 588 (1993). However, studies have suggested that judges exclude more evidence under *Daubert* than they had under *Frye*. Vickers, *supra* note 10, at 126–32 (discussing studies by the RAND Institute for Civil Justice and the Federal Judicial Study that together confirm that judges are excluding more evidence under *Daubert* than they had under *Frye*).

Daubert was meant to accomplish, which translates into increased difficulty in application.

Although it is difficult to quantify how often judges misapply *Daubert*, Gatowski's study suggests that judges may often misapply the *Daubert* factors, which could lead to incorrect results and the exclusion of "good" evidence or inclusion of "bad" evidence.¹⁰³ The difficulties that judges experience when applying *Daubert* are particularly troublesome because of juries' tendencies to place undue reliance on expert testimony simply because it is expert testimony.¹⁰⁴ Since juries rely heavily on expert testimony, improperly admitted testimony or the lack of improperly excluded testimony could influence the outcome of a trial, which highlights the importance of ensuring accurate admissibility determinations.¹⁰⁵

Criticisms of judges' abilities to grasp difficult scientific concepts predate the *Daubert* era. Although judges may be better equipped than the average juror to make determinations requiring scientific knowledge, judges rarely have a technical background.¹⁰⁶ One pre-*Daubert* jurist commented that "substantive" review of "mathematical and scientific evidence by technically illiterate judges is dangerously unreliable."¹⁰⁷ The same judge concurred in another case because he said he lacked the technical expertise to make an informed decision.¹⁰⁸ The difficulties inherent in generalist judges making determinations as to the admissibility of scientific evidence existed before *Daubert* and still continue.

According to a 2000 study by the Federal Judicial Center,¹⁰⁹ *Daubert* failed to fix other problems with expert testimony, including lack of

103. Gatowski et al., *supra* note 85, at 443.

104. Kayla Mannucci, *Note, Framed by Forensics: Fulfilling Daubert's Gatekeeping Function by Segregating Science from the Adversarial Model*, 39 CARDOZO L. REV. 1947, 1976 (2018) ("[J]urors are inclined to attach significant value to scientific testimony.").

105. *Id.*

106. Wesley, *supra* note 18, at 685.

107. *Ethyl Corp. v. E.P.A.*, 541 F.2d 1, 67 (D.C. Cir. 1976) (Bazelon, C.J., concurring).

108. *Int'l Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 651 (D.C. Cir. 1973) (Bazelon, C.J., concurring) ("I recognize that I do not know enough about dynamometer extrapolations, deterioration factor adjustments, and the like to decide whether or not the government's approach to these matters was statistically valid. . . . I do not have the technical know-how to agree or disagree with [the court's] evaluation.").

109. According to its website, the Federal Judicial Center is "the research and education agency of the judicial branch of the United States government." FED. JUD. CTR., <https://www.fjc.gov/> [<https://perma.cc/TG55-PVVP>] (last accessed

objectivity in expert opinions, experts acting more as advocates than neutral third parties, and high costs of litigation.¹¹⁰ The same study asked judges to rank, on a scale from one to five, with one being “very infrequent” and five being “very frequent,” several other aspects of post-*Daubert* expert testimony.¹¹¹ Of the federal judges surveyed, the mean rank of “expert testimony not comprehensible to the trier of fact” was a 2.49.¹¹² This ranking illustrates the potential for lack of comprehension of the proffered evidence, which could cause the evidence to be misevaluated. The mean rank of “expert testimony appears to be of questionable validity or reliability” was 2.86.¹¹³ This ranking indicates that judges often question the reliability of the proffered evidence. The Federal Judicial Center study shows that *Daubert* did not fix the main problems with expert testimony, and issues with expert testimony requiring *Daubert* hearings arise relatively frequently.

II. PROPOSED SOLUTIONS TO THE DIFFICULTIES REGARDING TECHNICAL AND SCIENTIFIC ISSUES

Commentators and courts have proposed using several procedural mechanisms to help judges understand technically or scientifically complex testimony.¹¹⁴ The proposed solutions are court-appointed experts, informal advisors, and special masters. Judges have used court-appointed experts and informal advisors sparingly, while special masters are used extensively, but almost exclusively, in patent litigation.

A. Court-Appointed Experts

Both Justice Blackmun writing for the majority in *Daubert* and Justice Breyer concurring in *Joiner* advocated the use of court-appointed experts to engage with the scientific community in *Daubert* hearings.¹¹⁵ Judges

Jan. 10, 2019, 4:15 PM); Carol L. Krafska, Joe S. Cecil & Mary T. Johnson, *Expert Testimony in Federal Civil Trials: A Preliminary Analysis* (FED. JUD. CTR. 2000).

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.*

114. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 149 (1997) (Breyer, J., concurring); Bert Black et. al., *Science and the Law in the Wake of Daubert: A New Search for Scientific Knowledge*, 72 TEX. L. REV. 715, 794–97 (1994) (suggesting court-appointed experts, informal advisors, and special masters are all viable options for helping judges with *Daubert* analyses).

115. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 595 (1993); *Joiner*, 522 U.S. at 149 (Breyer, J., concurring).

appoint court-appointed experts pursuant to FRE 706.¹¹⁶ Either the parties, or the court on its own motion, may move for selection of a court-appointed expert.¹¹⁷ This expert must advise the parties of her findings,¹¹⁸ and the court or any party may call the expert to testify.¹¹⁹ All parties may depose or cross-examine the expert,¹²⁰ and parties may still proffer their own experts.¹²¹ Utilizing court-appointed experts is an established method of engaging the scientific community.

Scholars and the Supreme Court have advocated the increased use of court-appointed experts to help with decisions requiring scientific or technical knowledge in the context of *Daubert* hearings.¹²² First, advocates point out that the FRE contemplates the use of court-appointed experts.¹²³ Second, proponents of using court-appointed experts in *Daubert* hearings claim that court-appointed experts can help diminish the battle-of-the-experts problem.¹²⁴ Relatedly, court-appointed experts may help diminish the prevalence of “hired guns” who align their testimony to support the party paying for them.¹²⁵ In fact, the Advisory Committee specifically

116. FED. R. EVID. 706.

117. *Id.* 706(a).

118. *Id.* 706(b)(1).

119. *Id.* 706(b)(3).

120. *Id.* 706(b)(2)–(4).

121. *Id.* 706(e).

122. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 595 (1993); *General Elec. Co. v. Joiner*, 52 U.S. 136, 150 (1997) (Breyer, J., concurring); See Sofia Adroque & Alan Ratliff, *The Independent Expert Evolution: From the “Path of Least Resistance” to the “Road Less Traveled?”*, 34 TEX. TECH L. REV. 843 (2003).

123. *Daubert*, 509 U.S. at 595; *Joiner*, 52 U.S. at 150 (Breyer, J., concurring).

124. The battle-of-the-experts problem occurs when two experts come to opposite conclusions in their testimonies. The fact-finder is left having to determine which is right when both sides have presented “impressive, articulate, highly-credentialed witness.” Thomas Crowley, *Help Me Mr. Wizard! Can We Really Have “Neutral” Rule 706 Experts?*, 1998 DET. C.L. MICH. ST. U. L. REV. 927, 947 (1998).

125. A constant criticism of expert testimony in general is that the experts, because they are hired by the parties, become merely “hired guns” whose monetary dependency on the party that hired them induces them to be extremely biased in favor of the evidence their party wants them to present. See, e.g., Crowley, *supra* note 124, at 947; Eric G. Jensen, *When “Hired Guns” Backfire: The Witness Immunity Doctrine and the Negligent Expert Witness*, 62 UMKC L. REV. 185 (1993); Randall K. Hanson, *Witness Immunity Under Attack: Disarming “Hired Guns,”* 31 WAKE FOREST L. REV. 497 (1996); Lora M. Levett & Margaret Bull Kovera, *Psychological Mediators of the Effects of Opposing Expert Testimony on Jury Decisions*, 15 PSYCHOL. PUB. POL’Y & L. 124 (2009); Christopher Tarver Robertson, *Blind Expertise*, 85 N.Y.U. L. REV. 174 (2010).

stated in its comments to FRE 706 that the Rule could be used to diminish the malevolent effects of dueling experts.¹²⁶ With the court-appointed expert's neutrality, the judge and jury will be able to focus on the scientific problems rather than issues like witness credibility, which will help them better understand the substantive issues.¹²⁷

Court-appointed experts have several limitations. First, the Advisory Committee notes contemplate court-appointed experts as a deterrent to parties proffering unscrupulous experts rather than frequent participants in trials.¹²⁸ Second, if court-appointed experts diminish the battle-of-the-experts problem, then their opinions must receive some degree of preferential treatment from the fact-finder that could, and does, lend experts an "aura of infallibility."¹²⁹ Instead of solving the battle-of-the-experts problem, the addition of another expert may only exacerbate it.¹³⁰ Most importantly, every benefit of court-appointed experts rests on the presumption that the experts will be neutral. Commentators have pointed out that the notion of the perfectly neutral expert is flawed and unattainable.¹³¹ Experience shows that juries are likely to agree with the court-appointed expert.¹³² If the expert is not neutral, then she could easily project her biases into the court room. Additionally, because any party may depose, cross-examine, and call court-appointed experts to testify,¹³³ fierce fights could erupt over the neutrality of the expert. Moreover, because of the court-appointed expert's accessibility to any party, the expert may complicate an already complex trial, which would increase cost for everyone involved. Despite court-appointed experts' drawbacks, increased use of court-appointed experts would likely still be better than the current state of affairs in *Daubert* hearings because the expert could increase the judge's comprehension of scientific and technical issues.

126. FED. R. EVID. 702 Advisory Committee's note.

127. *Id.*

128. FED. R. EVID. 702. The Advisory Committee's note states, "While experience indicates that actual appointment is a relatively infrequent occurrence, the assumption may be made that the availability of the procedure in itself decreases the need for resorting to it." *Id.*

129. *Id.*; Robertson, *supra* note 125, at 198.

130. Mannucci, *supra* note 104, at 1979.

131. *See* Crowley, *supra* note 124, at 947 (stating that science is not "value neutral" and that experts necessarily cannot be neutral because they have subscribed to scientific theories and courses of study to obtain the level of knowledge requisite to qualify as an expert").

132. Karen Reisinger, *Court-Appointed Expert Panels: A Comparison of Two Models*, 32 IND. L. REV. 225, 237 (1999).

133. FED. R. EVID. 706.

B. Informal Advisors

Informal advisors could also help judges with *Daubert* analyses. In 1920 in *Ex parte Peterson*, the Supreme Court recognized judges' inherent authority to appoint informal advisors.¹³⁴ In *Peterson*, the trial judge had tasked an informal advisor with narrowing the objects of the dispute to ease the strain on the jury and judge's time.¹³⁵ The informal advisor was not allowed to make final determinations, and the appeal turned on whether use of the informal advisor infringed the parties' Seventh Amendment right to trial by jury.¹³⁶ The Supreme Court concluded that, in the absence of contrary legislation, judges retain the power to appoint an informal advisor pursuant to the court's inherent authority.¹³⁷ The limits of an informal advisor's authority were not fully delineated for many years.

The United States Court of Appeals for the First Circuit decided *Reilly v. United States* in 1988, and *Reilly* has become the leading case on the jurisprudential limits of informal advisors.¹³⁸ In *Reilly*, the First Circuit distinguished informal advisors from court-appointed experts¹³⁹ and concluded that FRE 706 does not apply to informal advisors.¹⁴⁰ By ruling that informal advisors fall outside the purview of FRE 706, the court freed informal advisors from the Rule's constraints. As such, parties can neither depose nor cross-examine an informal advisor.¹⁴¹

Reilly imposed several limits on informal advisors. The informal advisor is restricted to acting as a "sounding board" for the judge to help

134. *Ex parte Peterson*, 253 U.S. 300, 312 (1920) ("Courts have (at least in the absence of legislation to the contrary) inherent power to provide themselves with appropriate instruments required for the performance of their duties.").

135. *Id.* at 306–7.

136. *Id.* at 307.

137. *Id.* at 312–13.

138. *Reilly v. United States*, 863 F.2d 149 (1st Cir. 1988) (concluding that informal advisors are not bound by FRE 706).

139. *Id.* at 155–56.

140. *Id.* The First Circuit in *Reilly* is one of the few courts to comment extensively on the role of informal advisors and to attempt to delineate their Article III confines. For the purposes of this Comment, the First Circuit interpretation will be considered as the standard because it is, to the author's knowledge, the only standard. Robert L. Hess II, *Judges Cooperating with Scientists: A Proposal for More Effective Limits on the Federal Trial Judge's Inherent Power to Appoint Technical Advisors*, 54 VAND. L. REV. 547, 582–83 (2001) (stating that beyond the First Circuit, the only limit on inherent advisors' powers is Article III).

141. *Reilly*, 863 F.2d at 158.

her understand difficult scientific or technical issues.¹⁴² Because informal advisors are not judges, courts may not abdicate judicial responsibility to them.¹⁴³ Moreover, because informal advisors are not witnesses, they may not contribute evidence, and therefore informal advisors cannot testify.¹⁴⁴ Thus, although informal advisors are free from the rigors of deposition and cross-examination, informal advisors are also limited in the functions they can serve.

Proponents of the increased use of informal advisors to promote scientific analyses of expert testimony offer several benefits. An informal advisor may help the judge understand the case's scientific issues by deciphering competing experts' opinions.¹⁴⁵ Additionally, some commentators have suggested that scientists may be wary of testifying because of the nature of the adversarial process.¹⁴⁶ The informal advisor's role is more insulated from the adversarial process because she does not fall under FRE 706, so "real" scientists may be more apt to participate, as opposed to purported scientists peddling junk science.¹⁴⁷

Informal advisors avoid many of the downsides of court-appointed experts. There is no "aura of infallibility" problem because the jury does not rely on the informal advisor's opinions directly, and informal advisors do not contribute evidence. Similarly, there is no possibility that the informal advisor could exacerbate the battle-of-the-experts problem because informal advisors are not testifying experts.¹⁴⁸ Finally, an informal advisor's inclusion in the trial does not further complicate the proceedings because she is not as visually involved as court-appointed experts.

There are several problems, however, with informal advisors, including jurisprudential restrictions, overall lack of transparency, and lack of accountability. First, the *Reilly* court limited the use of informal advisors to extraordinary circumstances, describing times when appointment would be

142. *Id.*

143. *Id.*

144. *Id.* at 159.

145. Hess, *supra* note 140, at 562.

146. Samuel Jackson, *Technical Advisors Deserve Equal Billing with Court Appointed Experts in Novel and Complex Scientific Cases: Does the Federal Judicial Center Agree?*, 28 ENVTL. L. 431, 453 (1998) (arguing that scientists are wary of the adversarial process because it differs from the scientific method, so some may avoid participating in the legal system).

147. *Id.*

148. *Reilly*, 863 F.2d at 156; Robertson, *supra* note 125, at 198.

necessary as “hen’s-teeth rare.”¹⁴⁹ Second, appointment of an informal advisor is a departure from the adversarial system because parties are not allowed to cross-examine the advisor, whereas parties can cross-examine a court-appointed expert.¹⁵⁰ If the informal advisor possessed any biases or was not entirely neutral, the negative effects of her lack of neutrality would be far greater than the same problems with court-appointed experts because of the largely insulated nature of the independent advisor. The lack of cross-examination also means that only the judge reviews the advisor’s opinions, and ex parte consultations between the judge and advisor need not be disclosed to the parties.¹⁵¹

The lack of transparency inherent in the informal advisor’s role may be worrisome for parties;¹⁵² expert biases could dramatically affect the course of litigation because informal advisors’ opinions are not checked by the opinions of other experts. Legislation does not govern the appointment of informal advisors, which means that only Article III of the United States Constitution and jurisprudence restrain the possible extent of an informal advisor’s authority.¹⁵³ Finally, the remedy for improper influence or improper appointment of an informal advisor seems to be appeal of the appointment, which, if reversed, would likely necessitate a new trial with a different judge, thereby rendering the original appointment a complete waste of judicial and party resources.¹⁵⁴ In short, the efficacy of informal advisors as a solution suffers from a lack of transparency and an overall lack of rules governing their conduct.

C. *Special Masters*

Special masters are fundamentally different than informal advisors and court-appointed experts. Special masters exercise a quasi-judicial function because they make rulings and submit “reports and recommendations” to the referring judge.¹⁵⁵ Special masters do not offer testimony like court-

149. *Id.* at 157. This restriction is not insurmountable and would only require courts to loosen the restrictions on informal advisors.

150. *See generally*, Hess, *supra* note 140, at 585–86; FED. R. EVID. 706(b)(4).

151. Hess, *supra* note 140, at 558.

152. If informal advisors were used more often, parties would appeal subsequent decisions based on a lack of transparency. For informal advisors to be used more often and still be efficient, there would have to be disclosure to the parties as to what the advisor and judge discuss. This would not be difficult because the judge could simply order it.

153. Hess, *supra* note 140, at 582–88.

154. *Reilly v. United States*, 863 F.2d 149 (1st Cir. 1988).

155. FED. R. CIV. P. 53.

appointed experts.¹⁵⁶ A helpful comparison is that special masters are similar to magistrate judges who perform only the duties assigned by the referring judge and who are not judges themselves.¹⁵⁷

FRCP 53 broadly allows for the appointment of a special master when one of the following requirements are satisfied: (1) the parties consent;¹⁵⁸ (2) a district judge or magistrate judge cannot effectively and timely address pretrial and post-trial matters;¹⁵⁹ or (3) when there is an exceptional condition, a difficult computation of damages, or the need to perform an accounting during a bench trial.¹⁶⁰ The judge's appointing order prescribes the limits of a special master's authority, which may be quite broad.¹⁶¹ The judge reviews both the special master's conclusions of law and any findings of fact to which a party objects *de novo*.¹⁶² Together with court-appointed experts and informal advisors, special masters are one of the three procedural mechanisms judges may turn to for help.

Unlike informal advisors and court-appointed experts, special masters are uniquely suited for the task of deciphering difficult technical and scientific questions.¹⁶³ Special masters have performed a variety of litigation functions on behalf of the referring judge.¹⁶⁴ In fact, Congress heavily amended FRCP 53 in 2003 to incorporate changing practices in using special masters.¹⁶⁵ The amendments "confirmed the authority to appoint" special masters for pretrial matters, which include *Daubert* hearings.¹⁶⁶

If a judge appoints a special master to preside over a hearing, the special master will hear the arguments of both parties and then submit a

156. *Id.* 53(f).

157. *Id.* 53(c).

158. *Id.* 53(a).

159. *Id.* 53(c).

160. *Id.* 53(b)(i)–(ii).

161. *Id.* 53(c).

162. *Id.* 53(f)(3), (4). Because the admissibility of evidence is a legal conclusion, any decision by a special master regarding admissibility would be reviewed *de novo*.

163. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 149 (1997) (Breyer, J., concurring) (“[J]udges have increasingly found in the Rules of Evidence and Civil Procedure ways to help them overcome the inherent difficulty of making determinations about complicated scientific, or otherwise technical, evidence. Among these techniques are . . . the appointment of special masters.”); Margaret G. Farrell, *Coping with Scientific Evidence: The Use of Special Masters*, 43 EMORY L.J. 927, 969 (1994).

164. Farrell, *supra* note 163, at 969.

165. FED. R. CIV. P. 53 Advisory Committee's note.

166. *Id.*

report and recommendation to the judge.¹⁶⁷ The judge usually will accept the report and recommendation of the special master, but the parties have an opportunity to object to the special master's factual and legal conclusions.¹⁶⁸ This preserves judicial autonomy and allows the judge and parties to check the special master's conclusions.

III. SPECIAL MASTERS ARE THE BEST WAY TO INCREASE THE ACCURACY OF ADMISSIBILITY DETERMINATIONS IN *DAUBERT* HEARINGS

Special masters are the ideal way to increase the accuracy of *Daubert* determinations. Special masters may be used to resolve the reliability prong of the *Daubert* analysis for which a scientist-special master is particularly suited given her experience in a particular field. This bifurcation of the *Daubert* analysis would increase judicial efficiency without creating a large financial strain on the parties, while also helping a case arrive at a just result by keeping unreliable science out of the courtroom.

A. Current Use of Special Masters

Judges can appoint special masters under limited circumstances. Currently, judges cannot appoint a special master unless the parties consent,¹⁶⁹ there is an exceptional circumstance,¹⁷⁰ or a statute provides for the appointment.¹⁷¹ First, asking the parties to consent may be difficult because the parties will have to bear the cost of the special master.¹⁷² Although one party may consent, believing her expert will pass muster and the adverse party's expert will not, the adverse party is unlikely to agree to the added expense if she does not believe the appointment will be in her favor. Because of the possibility that one or both parties will not consent, relying on the consent of the parties is not the most effective way to increase special master appointment.

The second route to special master appointment is an exceptional circumstance.¹⁷³ The Eighth Circuit held that environmental litigation

167. *Id.* 53(e).

168. *Id.* 53(f).

169. *Id.* 53(a)(1)(A).

170. *Id.* 53(a)(1)(B)(i).

171. *Id.* 53(a)(1).

172. *Id.* 53(g)(2)(A). FRCP 53(g)(2)(A) states that the special master can also be paid "from a fund or subject matter of the action within the court's control." For simplicity's sake, only the option of having the parties pay will be considered.

173. *Id.* 53(a)(1)(B)(i).

brought under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 does not constitute exceptional circumstances sufficient for the special master to preside over the whole trial on the merits.¹⁷⁴ In the same case, however, the court held that the special master could conduct and supervise pretrial matters and hear motions for summary judgment.¹⁷⁵ Similarly, the United States Court of Appeals for the District of Columbia Circuit rejected a request for a writ of mandamus directing the district judge to revoke the appointment of a special master when the appointing order charged the special master “with selecting a ‘representative sample’ of the withheld documents and with summarizing the arguments for and against each claimed exemption.”¹⁷⁶ The jurisprudence tends to show that the extent of allowable delegation of authority to the special master is directly related to the “exceptional-ness” of the issue, meaning the more exceptional the issue, the more authority the court can divest to the special master and vice versa.

Unfortunately, there are relatively few reported examples of special masters conducting a *Daubert* analysis under the exceptional circumstances provision. The lack of special masters conducting *Daubert* analyses suggests that judges believe *Daubert* hearings implicating complex scientific issues do not constitute the type of exceptional circumstance required. Regardless, judges should appoint special masters for *Daubert* hearings and appellate courts should uphold these appointments because the narrow evidentiary issues dealt with in *Daubert* hearings are only a small part of trial and, in theory, not dispositive, but the scientific and technical issues presented can be exceptionally difficult.¹⁷⁷ Barring increased appointments through the exceptional circumstances provision, the only remaining option to increase special master use in *Daubert* hearings is through statutory authorization.¹⁷⁸

Although evidence reform is likely not high on current congressional agendas, many states’ codes of civil procedure mirror the federal code.¹⁷⁹

174. *In re Armco, Inc.*, 770 F.2d 103, 105 (8th Cir. 1985); 42 U.S.C. §§ 9601–9628 (2018).

175. *In re Armco*, 770 F.2d 103.

176. *In re U.S. Dep’t of Def.*, 848 F.2d 232, 234 (D.C. Cir. 1988).

177. *See* Gatowski et al., *supra* note 85.

178. FED. R. CIV. P. (a)(1).

179. *See, e.g.*, D.C. SUPER. CT. R. CIV. P. 53. Louisiana’s special master statute, LA. REV. STAT. § 13:4165 (2019), provides:

Pursuant to the inherent judicial power of the court and upon its own motion and with the consent of all parties litigant, the court may enter an order appointing a special master in any civil action wherein complicated legal or factual issues are presented or wherein exceptional

Any “state . . . may serve as a laboratory”¹⁸⁰ by enacting legislation that explicitly allows special masters to preside over *Daubert* hearings.

The statute would be relatively simple:

Trial judges may, at their discretion, appoint a special master to preside over the reliability prong of *Daubert* hearings and issue a report and recommendation as to the admissibility of a party’s proffered expert’s testimony. In the event a judge elects to appoint a special master, the remaining portions of Rule 53 will apply in full.

Statutory authorization would allow courts to experiment with special master use, and Congress could take note if it worked. The statutory language allows special master appointment only for a very narrow part of the trial: the reliability prong of *Daubert*. Moreover, statutory authorization has the added benefit that parties will not be able to challenge the appointment of a special master as not falling under one of FRCP 53’s categories.

B. How Appointment of a Special Master Should Work

Under FRCP 53(c), the judge can circumscribe the special master’s authority, and there are benefits to doing so.¹⁸¹ First, limiting the special master’s authority would reduce costs because the special master would do less work than if the special master did the relevance inquiry as well. Second, accepting that most judges are not scientists and that most scientists are not legal experts, legal determinations, such as relevance, belong in the hands of the judge. The scientist–special master should make recommendations on the reliability prong alone because it is almost entirely a scientific question,¹⁸² while the judge should make the decision as to relevance prong of the *Daubert* analysis, which is almost entirely a legal question.¹⁸³ Third, bifurcating the *Daubert* inquiry will increase

circumstances of the case warrant such appointment.” The statute could be similarly amended to provide for the appointment of a special master to preside over the reliability prong of a *Daubert* hearing.

180. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 386–87 (1932) (Brandeis, J., dissenting).

181. FED. R. CIV. P. 53(c).

182. *See supra* text accompanying notes 60–67.

183. FED. R. EVID. 401; *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 598 (1993) (characterizing the admissibility of scientific evidence as “the ultimate legal question [which] depends on an appreciation of one or more bodies of knowledge not judicially noticeable.”).

judicial efficiency because the judge will simply have fewer things to do. Fourth, limiting the special master's role decreases the possibility of scientific biases affecting her decision and preserves judicial autonomy in deciding purely legal questions, such as relevance.

Pursuant to FRCP 53(f), the parties would retain an opportunity to challenge the special master's conclusions. In short, the scientist–special master would offer a professional assessment of the scientific validity of the proffered evidence, which the judge could then filter through a judicial lens and afford each party the opportunity to object to the report's recommendations.¹⁸⁴ The judge would either accept the special master's report and recommendation as to reliability or reject it. The judge would make an independent ruling in the same way *Daubert* determinations are made now, which preserves judicial autonomy.¹⁸⁵

The benefits of appointing a special master to preside over complex *Daubert* hearings include more just results and the return of one of *Frye*'s benefits. First, if the appointment of special masters in other contexts is instructive, special masters are more likely to correctly interpret scientific and technical evidence, and appellate courts are less likely to overturn special masters' determinations in “complex” cases.¹⁸⁶ Using special masters in *Daubert* hearings will advance the goal of accuracy in legal proceedings by increasing the likelihood the *Daubert* determinations are correct. Moreover, appointing a special master who is educated in the proffered scientific field will have the welcome effect of bringing back one of the main benefits of the *Frye* test: scientists judging science.¹⁸⁷

Relying on a scientist–special master also avoids *Frye*'s main downside, the inflexibility of the test as it relates to novel scientific methodology.¹⁸⁸ The *Frye* standard rejected novel scientific evidence

184. FED. R. CIV. P. 53(f)(1).

185. *Id.* 53(f)(3), (4).

186. See Jay P. Kesan & Gwendolyn G. Ball, *A Study of the Role and Impact of Special Masters in Patent Cases* (Federal Judicial Center 2009), available at <https://www.fjc.gov/sites/default/files/2012/SpecMaPa.pdf> [<https://perma.cc/8MVG-H78K>]. “Complexity” in the study is based on the length of the trial. The study also found that when the trial was not “complex,” decisions involving special masters and claim construction had relatively the same rate of reversal on appeal as did those without special masters. In the *Daubert* context, the length of the trial likely means that the testimony is more complex, but the focus should be on the complexity of the proffered scientific or technical testimony. Thus, overall trial length would not be the most appropriate metric for determining complexity in the context of *Daubert* hearings individually. At the very least, the study shows a correlation between longer trials and the relative correctness of special masters.

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

188. Kesan, *supra* note 29, at 1990.

when the underlying methodology had not yet met general acceptance in the field,¹⁸⁹ regardless of whether the methodology was scientifically valid.¹⁹⁰ With a scientist–special master applying *Daubert* to determine reliability, the scientist–special master could engage with the proffered evidence and determine on her own whether the methodology was scientifically valid. Under the scientist–special master solution and unlike under *Frye*, scientists would be able to judge science without compromising the admissibility of valid evidence derived from novel scientific methodology because the individual scientist–special master could be more flexible than the aggregate opinion of the scientific community.¹⁹¹ Furthermore, judicial oversight of the special master preserves the judicial function.¹⁹²

C. Lessons from Claim Construction

Patent infringement suits also require judges to make decisions that involve scientific and technical knowledge.¹⁹³ The claims of a patent define the invention and determine the patent’s scope.¹⁹⁴ Whether a patent has been infringed depends on the meaning of the words in the claims, and judges determine that meaning through claim construction.¹⁹⁵ The Supreme Court gave judges the responsibility of interpreting patent claims in *Markman v. Westview Instruments, Inc.*¹⁹⁶

Scholars have heavily criticized *Markman* in part because judges may not be capable of interpreting claims because of the claims’ complexity.¹⁹⁷ When engaging in claim construction, judges must give the words of the claim the meaning they would have to a person “of ordinary skill in the art

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

190. *Id.*

191. *Id.*

192. *United States v. Addison*, 498 F.2d 741, 744 (D.C. Cir. 1974).

193. Edmund Sease, *Markman Misses the Mark, Miserably*, U. ILL. J.L. TECH. & POL’Y 99, 99–100 (2004).

194. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 990 (Fed. Cir. 1995) (Mayer, J., concurring) (“Anyone who wants to know what a patent protects must first read its claims, for they are the measure of its scope.”).

195. *Id.* at 993; Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 7–8 (2001).

196. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1993) (holding that claim construction is an issue of law, so judges, not juries, must construe the claims).

197. See Sease, *supra* note 193, at 99–101; Victoria Slind-Flor, *Jurists Learn to Cope with the Brave New World*, NAT’L L.J. (Oct. 19, 1992) (suggesting that generalist judges sometimes cannot comprehend complex scientific issues).

of the invention.”¹⁹⁸ Few judges, however, are skilled in the art of the invention before them.¹⁹⁹ Judges often misinterpret the claims because of a lack of technical knowledge and significant experience with patent claims.²⁰⁰ One study showed that 33% of appealed claim constructions were erroneously construed at trial,²⁰¹ and estimates range as high as 50%.²⁰² The high rate of reversals is due in part to the de novo standard of review applied to claim construction in the United States Court of Appeals for the Federal Circuit.²⁰³ Anecdotal evidence also indicates that judges may not be fully equipped to interpret patent claims.²⁰⁴ *Markman* put judges in the uncomfortable position *Daubert* did, and judges responded by appointing special masters to oversee claim construction.

Judges often appoint special masters in patent infringement litigation, particularly to aid in claim construction, to fulfill the need for a decision-maker with scientific or technical knowledge.²⁰⁵ Judges may not understand the technical information needed to interpret the claim.²⁰⁶ Parties’ experts’ testimony can complicate proceedings and make decisions more difficult to properly render without preexisting technical knowledge.²⁰⁷ Thus, judges appoint special masters who understand the technical aspects of the patent to interpret the claim because special masters are more likely to come to the right decision efficiently.

A Federal Judicial Center study conducted by researchers Jay Kesan and Gwendolyn Ball suggests that special masters are more likely than

198. *Innova/Pure Water, Inc. v. Safari Water Filtration Sys.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004). The Federal Circuit is the exclusive court of appeal for patent claims. Unless the Supreme Court takes up a case and renders a ruling, the Federal Circuit’s decision applies nationwide.

199. Moore, *supra* note 195, at 7.

200. *Id.* at 11–16.

201. *Id.* at 13.

202. Donna M. Gitter, *Should the United States Designate Specialist Patent Trial Judges? An Empirical Analysis of H.R. 628 in Light of the English Experience and the Work of Professor Moore*, 10 COLUM. SCI. & TECH. L. REV. 169, 170 (2009).

203. *Id.* at 179. Incidentally, the de novo standard also makes empirical analysis of how often trial judges incorrectly construct the claims relatively easy, in contrast to the abuse of discretion standard applied in *Daubert* appeals.

204. See Honorable William G. Young, *High Technology Law in the Twenty-First Century*, 21 SUFFOLK TRANSNAT’L L. REV. 13 (1997) (panel of judges discussing difficulties they have had with patent cases).

205. Neil A. Smith, *Complex Patent Suits: The Use of Special Masters for Claim Construction*, 2 LANDSLIDE 36, 38 (2009).

206. *Id.*

207. *Id.*

trial judges to construe claims correctly in complex trials.²⁰⁸ The researchers compared appeals in patent cases where special masters were not appointed to appeals in which special masters were appointed.²⁰⁹ In “non-complex” cases—with “complex” defined as lasting over 1,000 days—cases with special masters had nearly the same rate of appeal and rate of reversal.²¹⁰ In “complex” cases, however, the rate of appealed cases that had appointed special masters is roughly half of those without special masters.²¹¹ Moreover, the researchers found that the reversal rate in “complex” patent cases without special masters was 11.7%, while in cases with special masters the reversal rate was only 3.6%.²¹² These statistics suggest that parties are less likely to appeal cases in which special masters are appointed, which promotes judicial efficiency. Additionally, the statistics suggest that special masters’ findings are less likely to be overruled, meaning the findings are more likely to be correct.²¹³ Judges should draw on the lessons learned from patent law and appoint special masters to make *Daubert* determinations when the underlying case involves complex, difficult, scientific, or technical issues.

IV. COUNTERARGUMENTS TO SPECIAL MASTERS IN *DAUBERT* HEARINGS

Two primary drawbacks exist to using special masters in *Daubert* hearings: the increased cost to litigants and expert bias. The first, increased cost to litigants, is common to legal reforms but can be alleviated with familiar tools. The second, expert bias, seems to be germane to expert testimony as a whole, but the procedural guarantees of FRCP 53 can help reduce biases.

A. Special Masters Increase Costs

Although special masters are the best existing procedural solution to the *Daubert* problem, special masters could be expensive for litigants.²¹⁴

208. Kesan & Ball, *supra* note 186, at 10.

209. *Id.*

210. *Id.*

211. *Id.* at 11.

212. *Id.*

213. *Id.* (“These results would suggest that the average case with a special master is both less likely to have a ruling appealed and less likely to have a ruling reversed than the ‘average’ complex patent case.”).

214. See Bedouin Joseph, *The Louisiana Special Masters Statute, A Valuable Tool or an Expensive and Unnecessary Diversion*, 51 LA. B.J. 261 (2003) (suggesting that special masters may lead to increased monetary costs to litigants).

Under FRCP 53 and the special master solution, the litigants would assume the cost of the special master.²¹⁵ Scientist–special masters would likely charge their rates as expert witnesses, and these rates could lead to high costs.²¹⁶ The judge has discretion under FRCP 53 as to the allocation of expenses; therefore, judges could institute a system that apportions cost according to time spent evaluating the expert testimony.

1. Time-Spent Allocation

Judges could allocate the costs of each special master proportional to the amount of time the special master spends evaluating each party's experts. For example, if the special master spends five hours evaluating the plaintiff's expert's testimony and ten hours evaluating the defendant's, the defendant would bear double the cost of the plaintiff or two-thirds of the overall cost of the special master. This time-spent allocation is fair because the special master has to spend more time judging the reliability of the defendant's expert's testimony compared to the plaintiff's. Moreover, although increased use of special masters could result in an increased net cost of litigation, a Federal Judicial Center study suggests that for individual cases, special masters may lower the cost of litigation.²¹⁷ Additionally, the same study found that in technically complex cases, all of the judges surveyed found the special masters effective in helping each judge understand the issue at hand.²¹⁸ Several judges also reported that in those cases, the special master saved the parties money, made the case settle faster, or improved the efficiency of judicial resources.²¹⁹

The institution of a risk-reward based system and scheduling of *Daubert* hearings prior to the end of discovery would alleviate much increase in cost. For example, suppose the plaintiff retains a hydrologic engineer to testify as an expert. The special master determines at the outset that the reliability of the evidence is questionable, and after conducting the

215. FED. R. CIV. P. 53(g)(2)(A).

216. See Joseph, *supra* note 214 (suggesting that special masters may lead to increased monetary costs to litigants).

217. Thomas E. Willging et al., *Special Masters' Incidence and Activity: Report to the Judicial Conference's Advisory Committee on Civil Rules and Its Subcommittee on Special Masters* (Federal Judicial Center 2000), available at [http://www.fjc.gov/public/pdf.nsf/lookup/SpecMast.pdf/\\$file/SpecMast.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/SpecMast.pdf/$file/SpecMast.pdf) [<https://perma.cc/5VXL-D9Z8>]; Lynn Jokela & David Herr, *Special Masters in State Court Complex Litigation: An Available and Underused Case Management Tool*, 31 WM. MITCHELL L. REV. 1299, 1312 (2005).

218. Willging et al., *supra* note 217, at 55.

219. *Id.* at 59.

reliability prong of the *Daubert* analysis, recommends to the judge that the testimony be ruled inadmissible due to lack of reliability. The judge then accepts the special master's report and recommendation and excludes the expert. If the special master conducts the *Daubert* analysis before the close of discovery, the plaintiff will have time to find a new expert. Moreover, the plaintiff is spared the expense of the now-excluded expert's written report, and the defendant is spared the expense of having her expert evaluate that report and the expense of deposing the plaintiff's expert.²²⁰

The plaintiff will still pay for the "evaluation" of the now-excluded expert testimony. The judge could monetarily penalize the offending party if she or the special master determines that the attorney proffering the expert acted frivolously. By penalizing the offending party, some of the cost shifts away from the non-offending party. The decision to penalize a party would be entirely within the judge's discretion under FRCP 53(g). Long term, penalties could reduce systemic costs because parties would be wary to proffer experts whose reliability is questionable.²²¹

2. Equitable Allocation

The cost of litigation varies depending on perspective. For example, a small firm or solo practitioner funding a toxic tort case will have a different view of the increased cost of the special master than a large corporate defendant that views the suit as frivolous. The former litigant may view the special master's fee as prohibitively expensive because the fee is another line item she will have to pay for.²²² The corporate defendant will view the special master's fee as another cost it must incur to defend a frivolous suit, which may have the adverse effect of forcing the corporate

220. FED. R. CIV. P. 26(a)(2)(B).

221. This approach would also have the effect of decreasing the prevalence of junk science in the courtroom because parties would not want to risk being hit with a penalty. Findings from a 2001 RAND report suggest that parties respond readily to changing admissibility criteria. The authors interpreted data suggesting there was a decrease in the percentage of excluded challenged evidence after 1997 to mean that "parties proposing evidence either did not propose or withdrew evidence not meeting the new standards, or better tailored evidence to fit the new standards." Lloyd Dixon & Brian Gill, *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the Daubert Decision*, RAND INST. FOR CIVIL JUSTICE REPORT xvii (2001). If the researchers' proposition is correct, it follows that parties would also stop proffering faulty expert testimony if they knew the special master was likely to exclude.

222. See generally, Marc Galanter, *Why the "Haves" Come out Ahead: Speculation on the Limits of Legal Change*, 9 L. & SOC'Y REV. 95 (1974).

party to settle.²²³ There is, however, a way to appease these competing interests.

The corporate defendant that believes it is facing a frivolous suit benefits from the judge's discretion in allocating cost and the protection from junk science that the scientist–special master confers. If the suit is frivolous or vexatious, the judge could allocate a part of the defendant's cost of the special master to the plaintiff.

For the plaintiff, the cost of the special master may be considered another financial barrier to her suit. If the plaintiff's suit is viable, however, then she should be able to find an expert whose testimony will be admissible. Thus, the plaintiff should welcome the scientist–special master as a means of ensuring that her expert's testimony reaches the courtroom, especially given that some commentators believe *Daubert* weighs against plaintiffs' experts' admissibility.²²⁴ Moreover, if the plaintiff's suit is successful, the judge could order the defendant to pay the cost of the special master's assessment of the plaintiff's expert at the conclusion of the trial.²²⁵ The judge should wait until the conclusion of the trial to order the allocation of the cost of the special master, but even if the judge does not, under FRCP 53(g)(3), the judge can amend an interim allocation after the suit concludes.

3. Proportionality as Incentive to Play Nice

In addition to the two methods described above, litigants could look toward the FRCP's 2015 amendments to the discovery rules as a means to reduce cost, and judges could look to the amendments for help in deciding how to allocate cost.²²⁶ In the words of Chief Justice Roberts, the Advisory Committee intended the amendments to address concerns that “litigation

223. See generally, Suja A. Thomas, *Frivolous Cases*, 59 DEPAUL L. REV. 633 (2010).

224. Edward Cheng & Albert Yoon, *Does Frye or Daubert Matter? A Study of Scientific Admissibility Standards*, 91 VA. L. REV. 471, 473 (2005) (“The resulting effects of *Daubert* have been decidedly pro-defendant. In the civil context, *Daubert* has empowered defendants to exclude certain types of scientific evidence, substantially improving their chances of summary judgment and thereby avoiding what are perceived to be unpredictable and often plaintiff-friendly juries.”).

225. FED. R. CIV. P. 53(g) (2018).

226. See generally, FED. R. CIV. P. TITLE V, Disclosure and Discovery and Committee Notes on 2015 Amendments.

ha[d] become too expensive, time-consuming, and contentious.”²²⁷ To resolve the increased expense of litigation, the Advisory Committee reintroduced the idea of proportionality.²²⁸ Under the current version of FRCP 26, a “matter” is discoverable if it is non-privileged and “relevant to any party’s claim and proportional to the needs of the case”²²⁹ To weigh proportionality, the litigants and judge must consider “the importance of the issues at stake in the action, the amount in controversy, the parties’ relative access to relevant information, the parties’ resources, the importance of discovery in resolving the issues, and whether the burden or expense of the proposed discovery outweighs its likely benefit.”²³⁰ To enforce the requirement of proportionality, judges may, “for good cause,” issue a protective order to protect a party from undue burden or expense by allocating the expenses of the discovery to the party requesting it.²³¹

Some of the proportionality factors are readily adaptable to the *Daubert* hearing context.²³² First, the judge could consider the relevance of the proffered testimony as it relates to resolving a contested material fact. Of course, if the proffered testimony is not relevant, the judge must exclude it under *Daubert* and FRE 401. That said, testimony could be relevant but relatively unimportant. For example, in a hypothetical toxic tort case, an expert’s testimony regarding known rates of cancer after exposure to a particular substance would be highly relevant and critically important. In contrast, an expert’s testimony as to known rates of cancer in the particular ethnic subgroup of which the plaintiff is a member would be less relevant and much less important, but likely still admissible. Assuming the plaintiff offers the former expert and the defendant offers the latter, it may be appropriate to shift some of the cost of the special master to the defendant, since the plaintiff had to proffer the more relevant and important expert testimony to counter that of the defendant. Thus, litigants will be incentivized to proffer only relevant, important expert testimony, which will reduce cost and improve efficiency.

Second, the judge should consider “the parties’ relative access to relevant information.”²³³ For example, suppose that in the same

227. JOHN G. ROBERTS, JR., 2015 YEAR-END REPORT ON THE FEDERAL JUDICIARY (2015) 4, available at <https://www.supremecourt.gov/publicinfo/year-end/2015year-endreport.pdf> [<https://perma.cc/9Q7B-2E66>].

228. FED. R. CIV. P. 26(b)(1).

229. *Id.*

230. *Id.*

231. *Id.* 26(c)(1).

232. *Id.*

233. *Id.*

hypothetical toxic tort case the plaintiff attempts to introduce testimony of a renowned oncologist regarding the effect of a particular cancer on the body. Expert testimony is powerful, and parties will want to put experts on the stand to help convince the jurors to find in their favor. If the same evidence in the oncologist's testimony could be elicited through other means—for example, from the plaintiff's treating physician, who may be less renowned and less expensive than calling the additional expert—this situation favors shifting cost to the party proffering the renowned oncologist. Parties are free to call as many experts as the parties see fit, and highly credentialed experts may be more convincing to juries.²³⁴ If parties want to use this trial strategy, however, they must be prepared to pay for it.²³⁵

Finally, the judge should consider “whether the burden or expense of the [proffered testimony] outweighs its likely benefit.”²³⁶ Consideration of the burden or expense outweighing the benefit factor would allow the judge to allocate more cost to the party who proffers redundant, or generally unhelpful, expert testimony. Parties concerned with strict application of the factor would be disinclined to proffer unhelpful testimony, which would result in fewer experts, less cost, and more efficiency.

The proportionality factors listed above could serve as guideposts for judges determining how to allocate the cost of the special master. Combined with the time-spent method and the equitable method described above, the factors could serve as a starting point for a judge exercising her discretion under FRCP 53(g) to allocate the cost of the special master. Moreover, strict application of the proportionality factors would improve efficiency and reduce cost because parties would proffer fewer experts.

B. Ensuring Neutrality of Special Masters

The more difficult drawback to the use of special masters in *Daubert* hearings is the possible lack of neutrality, which is the same problem that court-appointed experts, informal advisors, and expert testimony in general present.²³⁷ Accepting that any scientist–special master will come into a case with scientific biases that could affect her judgment, the question becomes how to counter special masters' biases, or at the very

234. See generally, Douglas Hanna & Paul R. Ferreira, *Expert Witness Overview: A Common Sense Approach*, 229 N.J. LAW. 11 (2004).

235. *Id.*

236. FED. R. CIV. P. 26(b)(1).

237. Crowley, *supra* note 124, at 947.

least, reduce the effects.²³⁸ No one can depose, cross-examine, or call the special master to testify, so it would be difficult to draw out any biases via the adversarial method.²³⁹ By limiting the special master's authority to the reliability prong of the *Daubert* inquiry, the effects of any bias will be limited.

The special master's role, which is fundamentally different than that of the court-appointed expert and informal advisor, will effectively counter any lack of neutrality.²⁴⁰ The special master's role is more judicial in nature, and the increased formalism required by the written, presumably well-reasoned report and recommendation would decrease the possibility of expert biases clouding judgment and may help to get "better" scientists to assist in the courtroom.²⁴¹ These "better" scientists may be less apt to be biased, and the fact that neither party retains them supports that contention.²⁴² The increased formalism of special masters is inherent in FRCP 53.²⁴³ The special master makes legal and factual findings, unlike court-appointed experts and informal advisors.²⁴⁴ Moreover, FRCP 53 specifically contemplates that the special master is more akin to a judge.²⁴⁵ FRCP 53(b)(3) states that proposed special masters must file an affidavit disclosing whether there are any grounds for disqualification under 28 U.S.C. § 455,²⁴⁶ which is the standard for disqualification for judges, justices, and magistrate judges.²⁴⁷ Presumably, a scientist-special master, upon realizing the job's importance, would be more likely to avoid personal scientific biases when making *Daubert* determinations.

Additionally, the parties and the judge could work together to prevent biases. Under FRCP 53(b)(1), the parties may suggest candidates to serve as the special master.²⁴⁸ The suggestion provision in the Rule would reduce the odds of inherent scientific biases entering the courtroom because the judge could force the parties to agree on a special master. Additionally, the judge could screen for biases before appointing the special master. Moreover, because FRCP 53(e) requires the special master to make a report and recommendation to the judge, the judge could also screen for

238. *Id.*

239. FED. R. CIV. P. 53.

240. *See supra* text accompanying notes 190–214.

241. Jackson, *supra* note 146.

242. Michael Risch, *(Un)reasonable Royalties*, 98 B.U.L. REV. 187, 258 (2018).

243. FED. R. CIV. P. 53.

244. *Id.* 53(e)(3), (4).

245. *Id.* 53(b)(3).

246. *Id.*

247. *Id.*

248. *Id.* 53(b)(1).

biases after receiving the report and recommendation.²⁴⁹ FRCP 53(f)(1) gives the parties an opportunity to object, be heard, and present evidence that relates to the special master's report and recommendation.²⁵⁰ Through party interaction, any party could attempt to bring any biases to light.

Although there is a chance a special master would not be a completely neutral decision-maker, special masters are the best of the three proposed options because court-appointed experts and informal advisors come with equal propensity to be biased and fewer procedures to check these biases.²⁵¹ A biased informal advisor is troubling because the parties cannot check the informal advisor's opinions, and the informal advisor may communicate *ex parte* with the judge.²⁵² Parties do not have the ability to cross-examine, depose, or call informal advisors to testify as they do with court-appointed experts.²⁵³ On the other hand, parties receive a report and recommendation from a special master that can be challenged if the parties believe the special master made the wrong decision.²⁵⁴ Adding to the lack of party interaction with informal advisors is that the informal advisor's opinions do not have to be submitted to the parties in the form of a report.²⁵⁵ The insulation from the adversarial process allows informal advisors to avoid thorough examination of their opinions by the parties.²⁵⁶ Informal advisors avoid individual accountability because they are restricted to acting as the judge's "sounding board," so any of the informal advisors' biases would flow through the judge and be rendered judicial.²⁵⁷ Informal advisors are also less efficient because they teach the judge the relevant science, as compared to the scientist-special masters who apply knowledge they already possess.

Court-appointed experts avoid some of informal advisors' drawbacks with lack of neutrality because their opinions are subject to the full rigor of the adversarial process under FRE 706.²⁵⁸ But subjecting court-appointed experts' opinions to the adversarial process causes problems that reduce the efficiency of court-appointed experts.²⁵⁹ First, the court-appointed expert lacks the finality of the special master because the court-

249. *Id.* 53(e).

250. *Id.* 53(f)(1).

251. *See supra* text accompanying notes 129–135 and 151–157.

252. Hess, *supra* note 140, at 558.

253. FED. R. EVID. 706.

254. FED. R. CIV. P. 53(f)(1).

255. *Reilly v. United States*, 863 F.2d 149, 158 (1st Cir. 1988).

256. *See supra* text accompanying notes 151–157.

257. *Reilly*, 863 F.2d at 158.

258. *See supra* text accompanying notes 129–135.

259. *See supra* text accompanying notes 129–135.

appointed expert is simply another witness.²⁶⁰ Relatedly, being another witness exacerbates the battle-of-the-experts concern, and court-appointed experts may unfairly bias the jury.²⁶¹ The special master avoids these problems and guards against them. The special master cannot exacerbate the battle-of-the-expert issue because special masters cannot be called as witnesses.²⁶² Additionally, the special master may encourage parties and expert witnesses to behave properly because the special master is readily able to identify questionable methodology in testimony. Moreover, if the special master is only used to determine the reliability prong of the *Daubert* analysis, the special master cannot bias the jury because *Daubert* hearings are held outside of the jury's presence.²⁶³ In short, special masters may not be the perfect solution to scientifically complex *Daubert* determinations, but special masters are the best existing solution.

CONCLUSION

Courts should utilize special masters in *Daubert* hearings because the procedural safeguards in FRCP 53 make special masters a better option than court-appointed experts or informal advisors. Either courts should relax their interpretations of FRCP 53, or states should consider legislation to allow for more special master appointments. Although in patent cases judges usually appoint patent attorneys to act as special masters,²⁶⁴ scientists are better suited for the role in *Daubert* hearings. There may be other, not yet suggested, individuals who are well-suited for the task. A dearth of empirical research considers special masters in *Daubert* hearings, so further empirical studies are necessary to better ascertain the proposed solution's efficacy. Finally, because using special masters is not a perfect solution, and technical and scientific evidence is only likely to become more complex, scholars should continue to search outside of

260. See *supra* text accompanying notes 129–135.

261. See *supra* text accompanying notes 129–135.

262. FED. R. CIV. P. 53.

263. Brandon L. Boxler, *Judicial Gatekeeping and the Seventh Amendment: How Daubert Infringes on the Constitutional Right to a Civil Jury Trial*, 14 RICH. J.L. & PUB. INT. 479, 492–94 (2011) (discussing how *Daubert* hearings may prevent a jury from ever hearing the case because they are pretrial hearings that can be outcome-determinative).

264. Thomas L. Creel & Thomas McGahren, *Use of Special Masters in Patent Litigation: A Special Master's Perspective*, 26 AIPLA Q.J. 109 (1998).

existing solutions to try to alleviate the issues inherent with generalist judges making scientific determinations.²⁶⁵

265. See, e.g., Edward Di Lello, *Fighting Fire with Firefighters: A Proposal for Expert Judges at the Trial Level*, 93 COLUM. L. REV. 473 (1993); Ryan Seidemann et al., *Closing the Gate on Questionable Expert Witness Testimony: A Proposal to Institute Expert Review Panels*, 33 S.U. L. REV. 29 (2005).