2014

Redesigning the Science Court

Justin Sevier
Florida State University College of Law

Maryland Law Review

Volume 73 | Issue 3 Article 3

Redesigning the Science Court

Justin Sevier

Articles

REDESIGNING THE SCIENCE COURT

JUSTIN SEVIER*

ABSTRACT

Scientific evidence is a field in crisis. The validity and reliability of forensic techniques have been criticized by nearly every actor in the legal community—by attorneys, judges, the legal academy, and even the National Academy of Sciences—and high-profile cases of scientific evidence gone awry have garnered national attention. Policymakers have suggested many solutions to the scientific evidence crisis, including a controversial proposal to remove complex scientific cases from state and federal dockets and to hear those cases instead in a specialized "science court."

Science court proposals face one substantial hurdle: they have become exceedingly unpopular. But this is for good reason; it is entirely possible that the architects of the science court did not design it correctly. I argue—with evidence from original psychological experiments—that public approval of a lawmaking body is largely a function of two discrete psychological dimensions: decisional accuracy and procedural legitimacy. Earlier science court proposals failed to maximize public perceptions of these important psychological values.

I propose a redesigned science court, which includes features of both adversarial and inquisitorial decisionmaking paradigms and prioritizes these dual values. I then report the results from original experiments that illustrate: (1) that litigants prefer the redesigned science court significantly more than they prefer other

* Associate Research Scholar, Yale Law School; Visiting Assistant Professor of Law, University of Illinois (2010–2012). Ph.D. Candidate in Psychology, Yale University (2015); J.D., Harvard Law School (2006). I thank Tom R. Tyler, Dan Kahan, Kip Viscusi, Jennifer Robbennolt, Kenworthey Bilz, Arden Rowell, Bob Lawless, Joni Hersch, the *Maryland Law Review*, and the Yale University Department of Psychology for helpful comments on earlier drafts of this manuscript. I also thank my research assistant, Jason Kuo, for his helpful feedback, research, and editing work.

proposals to maintain the integrity of scientific evidence, and (2) the redesigned science court enjoys greater perceptions of decisional accuracy and procedural legitimacy from litigants. Implications for institutional design—and for the future of science in the courtroom—are discussed.

I. INTRODUCTION

As a child, Sally Clark was told that she was not bright enough to be an attorney.[1] Upon graduation from college, she instead worked as a merchant banker until she married her husband, Steve, in 1990.[2] With his encouragement, she decided to pursue her dream of becoming a licensed attorney specializing in corporate finance.[3] Together, she and Steve enjoyed a thriving law practice at a successful firm in Manchester, England.[4] But just five years later, everything changed.[5] Sally Clark would go on to stand trial for the murder of two of her children, and just a few years after that, at the age of forty-two, Sally Clark would be dead.[6] Her trial would come to be considered one of the great miscarriages of justice involving scientific evidence.

Sally Clark's first two children died shortly after birth, of what the Clarks believed to be "'cot death'" or Sudden Infant Death Syndrome ("SIDS").[7] The British government, however, charged Sally Clark with the premeditated murder of her sons.[8] The government's star witness, pediatrician Sir Roy Meadow, provided the jury with expert statistical evidence, in which he calculated what he believed to be the odds that two children born to the same household would die of SIDS.[9] He calculated the odds to be 1 in 73 million,[10] the result of multiplying the odds of each individual SIDS

1. Obituary, *Sally Clark*, TELEGRAPH (Mar. 19, 2007, 12:01 AM), http://www.telegraph.co.uk/news/obituaries/1545933/Sally-Clark.html.

2. *Id.*

3. *Id.*

4. *Id.*

5. *Id.*

6. *Id.*

7. *Id.* ("The Clarks believed that their two small sons had died naturally, the victims of so-called 'cot-death'"). Sudden Infant Death Syndrome is characterized by a child's sudden, unexpected death that lacks any medical explanation. Rachel Y. Moon, Rosemary S. C. Horne & Fern R. Hauck, *Sudden Infant Death Syndrome*, 370 LANCET 1578, 1578 (2007). The cause of SIDS is currently unknown. *Id.* at 1582.

8. *See* Obituary, *supra* note 1.

9. *Id.*

10. *Id.*

death (1 in 8,543) together.[11] On that overwhelming statistical evidence, the jury convicted Sally Clark of murdering her sons.[12]

There was, however, a problem with Sir Roy Meadow's testimony: it was completely wrong.[13] The pediatrician multiplied the individual probabilities together because he had assumed, without evidence, that the two SIDS deaths at issue were probabilistically independent events, when in fact, there might be environmental or genetic factors that increase the likelihood of a second SIDS death in a family after one has already occurred.[14] Nobody immediately caught this statistical error—not the jurors, not the attorneys, not the judge, and not several appellate justices.[15] Sally Clark spent over three years in prison before the error was finally corrected and her conviction was overturned.[16] She never recovered physically or psychologically from the deaths of her sons and from her wrongful conviction.[17] She died of alcohol poisoning four years after regaining her freedom.[18]

Sally Clark's cautionary tale is not limited to statistical evidence and is not limited to foreign nations. Consider the case of Douglas Prade in Ohio state court.[19] Douglas Prade's ex-wife, a doctor, was found shot to death in a parking lot the day before Thanksgiving in 1998.[20] Akron Police Captain Douglas Prade, who had a stormy relationship with his ex-wife, ultimately

11. R v. Clark, [2003] EWCA (Crim) 1020, [173], [181] (Eng.) (overturning Sally Clark's conviction and declaring the statistical evidence "wholly irrelevant").

12. R v. Clark, [2000] EWCA (Crim) 54, [114] (Eng.).

13. *Clark*, [2003] EWCA (Crim) at [173].

14. Ray Hill, *Multiple Sudden Infant Deaths—Coincidence or Beyond Coincidence?*, 18 PAEDIATRIC & PRENATAL EPIDEMOLOGY 320, 321–22 (2004) ("It is intuitively clear that an infant in a family which has already suffered a SIDS will be at increased risk of SIDS, because many genetic and environmental factors will be the same."); Letter from Peter Green, President, Royal Statistical Soc'y, to Lord Chancellor (Jan. 23, 2002) (on file with author); Press Release, Royal Statistical Soc'y, Royal Statistical Society Concerned by Issues Raised in Sally Clark Case (Oct. 23, 2001) (on file with author).

15. *Clark*, [2003] EWCA (Crim) at [172]–[180].

16. *Id.* at [181]; Ben Goldacre, *Prosecuting and Defending by Numbers*, THE GUARDIAN (Oct. 27, 2006, 19:24 EDT), http://www.theguardian.com/science/2006/oct/28/uknews1; *see also* Hill, *supra* note 14, at 320.

17. *Alcohol Killed Mother Sally Clark*, BBC NEWS (Nov. 7, 2007, 12:31 GMT), *available at* http://news.bbc.co.uk/2/hi/uk_news/england/essex/7082411.stm; Obituary, *supra* note 1.

18. Thair Shaikh, *Sally Clark, Mother Wrongly Convicted of Killing Her Sons, Found Dead at Home*, THE GUARDIAN (Mar. 17, 2007, 5:22 EDT), http://www.theguardian.com/society/2007/mar/17/childrensservices.uknews; *Alcohol Killed Mother Sally Clark*, *supra* note 17 (stating that Clark "was never able to pick up the threads of her life and career").

19. Rick Armon et al., *Former Akron Police Captain Douglas Prade Cleared in Murder, Released from Prison*, AKRON BEACON J. (Jan. 30, 2013, 9:07 AM), http://www.ohio.com/news/break-news/former-akron-police-captain-douglas-prade-cleared-in-murder-released-from-prison-1.368825.

20. *Id.*

stood trial for her murder.[21] A bite mark on his ex-wife's lab coat became the crux of the State's case against Prade.[22] A "[f]orensic dentist expert" testified that the bite mark, particularly the mark left from the attacker's bottom teeth, was a perfect match for Prade's jaw.[23] After hearing the expert's testimony that "'[e]very mark lined up,'" the jury then took just four hours to convict Prade of first-degree murder.[24] Although the jury was generally silent with respect to the nature of the deliberations, at least one juror reported that the bite mark evidence "sealed her decision."[25]

Douglas Prade remained in jail for fifteen years until early 2013, when previously untested DNA evidence left on the lab coat near the bite, collected by students involved in the Ohio Innocence Project at the University of Cincinnati, excluded Prade as a match and established his innocence.[26] Moreover, other dental experts cast serious doubt on the forensic dental testimony, noting that not only was Prade's jaw misaligned, but his dentures could not have produced the wound.[27] The irony could not have been lost on Prade; scientific expertise gave him his freedom, but it also stole fifteen years of his life from him.[28]

Scientific evidence is a field in crisis. These anecdotes are emblematic of a disturbing trend in which dubious scientific expertise—and even junk science—is routinely admitted into evidence in court, notwithstanding a mountain of empirical data questioning the efficacy of such evidence. Recent stories of lab technicians deliberately falsifying the results from scien-

21. *Id.*

22. Dennis McEaneney, *(1988 Trial Coverage) Bite Evidence Lines Up: Forensic Dental Expert Testifies That Wound on Slain Doctor's Arm Matches Ex-Husband's Lower Front Teeth. 'Every Mark Lined Up,' Akron Dentist Says*, AKRON BEACON J. (Jan. 29, 2013, 1:49 PM), http://barberton.ohio.com/1998-trial-coverage-bite-evidence-lines-up-forensic-dental-expert-testifies-that-wound-on-slain-doctor-s-arm-matches-ex-husband-s-lower-front-teeth-every-mark-lined-up-akron-dentist-says-1.368882.

23. *Id.*

24. *Id.*; Dennis McEaneney & Charlene Nevada, *(1988 Trial Coverage) Evidence Overwhelms Doubt: Jurors Mostly Mum About Deliberations, but Prosecution Uses Circumstantial Case to Convict Ex-Akron Police Capt. Douglas Prade. One Says Bite Mark Sealed It*, AKRON BEACON J. (Jan. 29, 2013, 1:50 PM), http://barberton.ohio.com/1998-trial-coverage-evidence-overwhelms-doubt-jurors-mostly-mum-about-deliberations-but-prosecution-uses-circumstantial-case-to-convict-ex-akron-police-capt-douglas-prade-one-says-bite-mark-sealed-it-1.368884.

25. *See* McEaneney & Nevada, *supra* note 24.

26. *See* Armon et al., *supra* note 19.

27. Dennis McEaneney & Charlene Nevada, *(1988 Trial Coverage) Bite Evidence Disputed: Dental Expert Says Former Akron Police Captain Has Misaligned Jaw, Dentures and Wouldn't Have Been Able to Leave Wound Found on Slain Doctor's Left Arm*, AKRON BEACON J. (Jan. 29, 2013, 1:49 PM), http://barberton.ohio.com/news/1998-trial-coverage-bite-evidence-disputed-dental-expert-says-former-akron-police-captain-has-misaligned-jaw-dentures-and-wouldn-t-have-been-able-to-leave-wound-found-on-slain-doctor-s-left-arm-1.368883.

28. Armon et al., *supra* note 19.

tific testing in criminal trials compound the problem.[29] In perhaps the most egregious case, a serologist in the West Virginia State Police Crime Laboratory presented false evidence—including "dry-lab" results, in which he never performed any tests at all—in over one hundred and thirty different cases, resulting in nearly $6.5 million in damages for wrongful conviction and in the exoneration of nine defendants.[30] The scope of the problem is pervasive; issues with scientific expertise affect not only forensics in criminal trials, but also evidence in civil cases involving medical malpractice, toxic torts, civil commitment, and economic damages.[31]

This crisis is dire but not new. Even before criticisms of forensic techniques began to mount—culminating in the National Academy of Sciences' devastating critique in 2009,[32] courts, legislators, and other policymakers expressed concern that jurors were failing to give scientific expertise its appropriate evidentiary weight.[33] Responding to concerns that the field of scientific evidence was beginning to amount to the legal equivalent of the Wild West, policymakers floated various structural solutions to the crisis. Some argued to change the laws of evidence so that scientific expertise would face greater scrutiny at the admissibility stage, thus preventing junk science from reaching the factfinder.[34] Others suggested providing the factfinder with additional tools to facilitate a correct understanding of the strengths and weaknesses of scientific expertise.[35] Still others suggested

29. Matt Clarke, *Crime Labs in Crisis: Shoddy Forensics Used to Secure Convictions*, PRISON LEGAL NEWS (Prison Legal News, W. Brattleboro, Vt.), Oct. 2010, at 1, *available at* https://www.prisonlegalnews.org/includes/_public/_issues/pln_2010/10pln10.pdf.

30. *Id.* at 18 ("[Fred] Zain was popular among prosecutors and police because the evidence he produced led to numerous convictions. It was later learned that he testified about tests he didn't do and for which the crime lab did not even have the equipment to perform.").

31. *Id.*

32. *See generally* COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCI. CMTY., NAT'L RES. COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD xix (2009) [hereinafter STRENGTHENING FORENSIC SCIENCE] (proposing an agenda for progress in the forensic science community because "significant improvements" are needed to "serve society more effectively").

33. *See* Jennifer F. Miller, Article, *Should Juries Hear Complex Patent Cases?*, 4 DUKE L. & TECH REV. 0004 (2004) (discussing the constitutionality of the complexity exception as applied to patent cases which would preclude jurors from hearing complex cases).

34. *See* Douglas King, *Complex Civil Litigation and the Seventh Amendment Right to a Jury Trial*, 51 U. CHI. L. REV. 581, 588 (1984) (arguing that the laws of evidence in part "restricted the complexity of the cases that could be put before a jury").

35. *See* Nancy J. Brekke et al., *Of Juries and Court-Appointed Experts: The Impact of Nonadversarial Versus Adversarial Expert Testimony*, 15 LAW & HUM. BEHAV. 451, 452, 454 (1993) (discussing the importance of adversial procedures and suggesting court-appointed experts to aid in jury understanding of complex issues).

bolder solutions, such as shrinking the pool of prospective experts to those whose credentials and methods could be vetted appropriately.[36]

Perhaps the boldest of these reforms was to create a specialized science court to evaluate complex scientific cases.[37] Policymakers have proposed different incarnations of the science court, but generally science courts would feature scientifically savvy factfinders taking evidence from specially vetted experts to decide complex cases demanding scientific knowledge.[38] The problem for these proposals, however, was a simple one: despite their meteoric rise, they became increasingly unpopular.[39] For a multitude of reasons, the science court failed to gain public traction or support from a majority of policymakers.[40]

One reason why the science court failed to gain traction may be that policymakers were, as the cliché goes, "doing it wrong." Proposals for the science court are long on theory yet short on empirical support. Empirical evidence might suggest that, at the outset, these proposals suffered from flawed designs. In this Article, I will argue that the successful design of a legal decisionmaking body is a function of two discrete dimensions: people must believe that the body possesses decisional accuracy—the ability to correctly apply the appropriate law to the true facts of a dispute—and possesses procedural legitimacy—the ability of a decisionmaking system to provide citizens with a sense of voice in the proceedings.[41] A legal institution that wishes to amass the greatest amount of popular support will maximize both of these values.[42] The earlier science court proposals might have attempted to maximize decisional accuracy, but at a major cost: lowered perceptions of procedural legitimacy.[43]

This Article is the first to support this claim with experimental data, and will use that data to design a science court that will prioritize citizens'

36. *See* Victor W. Weedn, *Ask Experts About Forensic Certification and Accreditation*, 25 CRIM. JUST. 48 (2010) (discussing accreditation and certification of experts and arguing it should be a basis "for judicial inquiry and testimonial foundation").

37. *See* Andrew W. Jurs, *Science Court: Past Proposals, Current Considerations, and a Suggested Structure*, 15 VA. J.L. & TECH. 1, 19 (2010) (proposing a science court to resolve current forensics problems).

38. *Id.* at 17–18 (discussing a suggestion that "[a] specially-qualified jury would be, as a general proposition, better than a normal jury . . . because formal education results in not only the direct development of skills or knowledge, but also the ability to transfer that knowledge to new tasks in new contexts").

39. *Id.* at 12–14 (explaining various criticisms of the science court model proposed in the 1970s).

40. *Id.* (explaining that "[l]ater critics . . . not[ed] that in the primary example of a science court 'in action,' the procedure failed").

41. *See infra* Part III.

42. *See infra* Part IV.

43. *See infra* Part IV.

perceptions of decisional accuracy and procedural legitimacy.[44] Ultimately, I will argue that a redesigned science court that enjoys the greatest public support must include the following: (1) vetted, court-appointed experts in science court proceedings; (2) science-savvy judges and law clerks; (3) trials by jury; and (4) the opportunity for vigorous cross-examination of the expert testimony by each party's attorney.[45] Toward that end, Part II of this Article will canvas the extent of the scientific evidence crisis, detail the proposed solutions, and provide an in-depth discussion of earlier science court proposals. Part III will argue that earlier science court proposals failed to gain traction, in part, because they did not maximize public perceptions of decisional accuracy and procedural legitimacy. Part IV will: (1) demonstrate empirically that perceptions of decisional accuracy and procedural legitimacy are discrete psychological dimensions that are not necessarily maximized in tandem; and (2) tease out the factors that affect public perceptions of accuracy and legitimacy. Part V will argue for a redesigned science court and demonstrate empirically that the redesigned court would enjoy greater public support, greater perceived decisional accuracy, and greater perceived legitimacy than other methods for addressing the shortcomings of complex scientific evidence. Part VI will conclude with implications of this new proposal for the viability of specialty courts and for the role of complex science in the courtroom; practical and philosophical objections to the proposal; and future directions for institutional design.

II. THE SCIENTIFIC EVIDENCE CRISIS

Sally Clark and Douglas Prade were not the only victims of scientific evidence gone awry.[46] Recent history details several other instances in which faulty science has led to unjust outcomes including, in a controversial case that made national headlines, death by lethal injection.[47] Indeed, policymakers' unease with scientific evidence—and forensic evidence in particular—came to a head in 2009, when the prestigious National Academy of Sciences released a scathing report in which it sharply criticized the use of several types of scientific expertise in the courtroom.[48] The problems

44. *See infra* Part IV.

45. *See infra* Part V.

46. *See supra* notes 1–28 and accompanying text.

47. *See* Steve Mills, *Cameron Todd Willingham Case: Expert Says Fire for Which Father Was Executed Was Not Arson*, CHI. TRIB., Aug. 25, 2009, http://articles.chicagotribune.com/2009-08-25/news/0908240429_1_cameron-todd-willingham-texas-forensic-science-commission-willingham-case (describing the case of Cameron Todd Willingham, who was executed based on potentially faulty forensic evidence).

48. *See* STRENGTHENING FORENSIC SCIENCE, *supra* note 32, at 8 ("The simple reality is that the interpretation of forensic evidence is not always based on scientific studies to determine its validity. This is a serious problem.").

associated with the use of forensic evidence in the courtroom are multifaceted and pervasive, and consist of dual failings: those of the forensic experts who testify and those of the courts that allow those experts to testify.[49]

Forensic experts—that is, experts who examine evidence including hair shafts, ballistics, tool marks, fingerprints, and handwriting for potential matches to criminal suspects—shoulder considerable blame for the use of faulty scientific expertise in court.[50] Perhaps surprisingly, most forensics admitted into evidence at trial lack sufficient scientific foundation; unlike academic disciplines that follow the scientific method—which focuses on the statistical falsification of theory-driven hypotheses—most forensic techniques do not rely on empirical testing at all.[51] Moreover, forensic disciplines are not enshrouded in a research culture that values the publication of findings for review by other forensic analysts in the field.[52] This is highly unusual, because the peer review process is a hallmark of nearly every serious scientific discipline.[53] Perhaps, then, it is unsurprising that many forensic experts have little formal scientific training and, more troubling, often work hand-in-hand with law enforcement personnel who retain them, creating financial incentives for these experts to skew their results—consciously or subconsciously—to favor the government's case.[54]

The certainty with which forensic experts declare their conclusions serves as another way in which these experts contribute to the scientific evidence crisis.[55] Academic disciplines trained in the scientific method typically phrase their conclusions in the form of statistical probabilities (for example, that the likelihood of seeing certain laboratory findings if those results were due to chance is one in twenty).[56] With the notable exception

49. *Id.* at 9.

50. *Id.* at 5–6, 57.

51. *Id.* For a thorough discussion of how to improve the field of forensic science through a research culture, see Jennifer L. Mnookin et al., *The Need for a Research Culture in the Forensic Sciences*, 58 UCLA L. REV. 725, 734–35 (2011). Moreover, instead of relying on the scientific method, forensic analysts frequently tout their wide-ranging "experience" when cross-examined about the validity of their analyses. *Id.* at 745. For example, a ballistics expert, in declaring that the bullet used to shoot someone originated from the defendant's gun, might declare that her analysis is based on having examined hundreds of weapons over the course of many years; shockingly, in some instances, a technician's experience with knives was considered sufficient to validate her opinion that a match existed between the bullet that struck the victim and the defendant's gun.

52. *Id.* at 733–38.

53. *See id.* at 743 (emphasizing that "transparency is a critical value of a functioning research culture").

54. *See* Melendez-Diaz v. Massachusetts, 557 U.S. 305, 318 (2009) (explaining forensic analysts' incentives to alter evidence to favor the government's case); *see also* Clarke, *supra* note 29 (highlighting a real-world case of this incentive).

55. *See* Mnookin et al., *supra* note 51 and accompanying text.

56. *Id.* at 742 (explaining that conclusions should be described based on the degree to which available data can support the claim and the degree to which confidence can be expressed).

of DNA experts, forensic experts phrase their conclusions in absolutes: the hair shafts, fingerprints, bullets, or bite marks either match or fail to match the defendant.[57] These disciplines, however, are not rooted in empirical science (and the degree of agreement required for a "match" is variable across forensic disciplines).[58] Therefore, there exists substantial risk that these conclusions are mistaken, and it is not obvious that factfinders account for this when weighing the evidence.[59]

Many commentators believe that forensic science is an incoherent discipline that lacks the independence and robustness of true scientific disciplines.[60] If courts—like these commentators—refuse to trust, wholesale, the conclusions reached by forensic experts, we could imagine that potentially unjust outcomes might be minimized.[61] Unfortunately, judges also shoulder the blame for potentially unjust outcomes in scientific cases.[62] Perhaps the most pervasive mistake judges make with respect to the admissibility of scientific evidence is to equate the longstanding use of a forensic technique with its objective scientific validity.[63] By deferring to precedential cases involving the same (or similar) forensic technique—and *especially* when deferring to non-controlling precedent from sister jurisdictions—judges enshrine (and fortify) potentially unreliable scientific evidence into state and federal case law, making it even more difficult to challenge that evidence in the future.[64] As discussed in more detail below, some commentators and judges have called for structural reforms to the legal system—for example, to use current admissibility standards to more closely scrutinize expert testimony,[65] expand the doctrine of ineffective assistance of counsel to include attorneys who fail to challenge faulty forensic evidence that is admitted into court,[66] and reexamine expert witness procedures to avoid a

57. *See* Jennifer L. Mnookin, *The Validity of Latent Fingerprint Identification: Confessions of a Fingerprinting Moderate*, 7 L. PROBABILITY & RISK 127, 139 (2008) (illustrating how forensic analysts' rhetoric describes their conclusions in absolute terms).

58. *See* STRENGTHENING FORENSIC SCIENCE, *supra* note 32, at 6–7.

59. *Id.* at 37.

60. *Id.* at 35–37, 87.

61. *Id.* at 87.

62. *Id.* at 12–13.

63. *See* Mnookin et al., *supra* note 51, at 747.

64. *Cf.* United States v. Green, 348 F. Supp. 2d 1, 2 (D. Mass. 2004) (expressing frustration with the state of controlling bifurcation of juries case law).

65. *See* Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 587 (1993) (agreeing with petitioners that the *Frye* test has since been "superseded by the adoption of the Federal Rules of Evidence"); *see also* Ruth Saunders, *The Circuit Courts' Application of* Daubert v. Merrell Dow Pharmaceuticals, Inc., 46 DRAKE L. REV. 407, 420 (1997) (discussing how the Second Circuit has criticized the focus of "the admissibility of expert testimony rather than sufficiency").

66. *See* Erica Beecher-Monas, *Blinded by Science: How Judges Avoid the Science in Scientific Evidence*, 71 TEMP. L. REV. 55, 76–77 (1998) ("Occasionally, defendants who have failed to challenge scientific evidence at trial attempt to raise the issue on appeal.").

"battle of the hired-gun experts" in which multiple experts testify and confuse the jury[67]—but progress has been slow.[68]

The debate over forensic evidence has reached a turning point. In 2009, in what may be considered the apotheosis of the movement to purify junk scientific evidence, the National Academy of Sciences ("NAS") released a report titled, *Strengthening Forensic Science in the United States: A Path Forward*.[69] The NAS Report, authored jointly by a committee composed of law professors, scientists, prosecutors, defense attorneys, and judges, discussed the weaknesses associated with scientific evidence and proposed several recommendations to legal policymakers, including the creation of a federal agency to oversee the field of forensic science.[70] Courts have slowly begun to take notice of the NAS Report, but meaningful changes to their approach to scientific evidence are not yet evident.[71] This inaction has engendered a rebirth of scholarship seeking solutions to the scientific evidence crisis generally,[72] and a rebirth of the proposal for the science court specifically.[73]

A. In Search of Solutions

An array of legal actors and policymakers has proposed structural solutions to maintain the integrity of legal decisions that involve scientific evidence. Most of these proposals fall into camps that reflect two different perspectives of jurors' abilities to evaluate complex information. The first set of proposals is designed to shield the jury from potentially unreliable evidence,[74] while the second set is designed to give jurors the tools they need to sift through potentially unreliable evidence that is presented to them.[75] Different actors in the legal community—some majoritarian and others countermajoritarian—have presented different proposals with differing levels of success.[76]

---

67. *See* Joel Cooper & Isaac M. Neuhaus, *The "Hired Gun" Effect: Assessing the Effect of Pay, Frequency of Testifying, and Credentials on the Perception of Expert Testimony*, 24 L. & HUM. BEHAV. 149, 150 (2000) (noting "it is likely that jurors will find [courtroom expert's] testimony difficult to comprehend and process").

68. *See infra* Part III.

69. For the NAS Report, see STRENGTHENING FORENSIC SCIENCE, *supra* note 32.

70. *Id.* at 18–33.

71. Nancy Gertner, *Commentary on the Need for a Research Culture in the Forensic Sciences*, 58 UCLA L. REV. 789, 790–92 (2011).

72. For a detailed discussion on reforming the scientific forensic evidence used in litigation, see STRENGTHENING FORENSIC SCIENCE, *supra* note 32.

73. *See* Jurs, *supra* note 37, at 28–29 (proposing a rebirth of the science court).

74. *See infra* Part II.A.1.

75. *See infra* Part II.A.2.

76. *See infra* Parts II.A.1–2.

1. "Shield-the-Factfinder" Solutions

The jury shield solution that has had the greatest impact on scientific trials in federal court came from the United States Supreme Court in its decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*[77] Under the *Daubert* decision, the role of determining the validity and reliability of scientific expertise is no longer functionally outsourced to the scientific community; instead, the trial judge is tasked as the gatekeeper for ensuring that junk science is not proffered to the jury.[78] To guide judges in this new role, the Court announced several non-exhaustive factors for judges to consider when deciding whether to admit scientific expertise into evidence, including whether the evidence is testable, has a known (or testable) error rate, has been subject to peer review, and enjoys the general acceptance of the scientific community.[79]

The efficacy of the *Daubert* factors for maintaining the integrity of scientific evidence in the courtroom is unclear. Critics have complained that the *Daubert* test affords judges wide discretion regarding which factors they use—and which they choose not to use—to determine whether scientific expertise is sufficiently reliable, which causes the test to become so flexible that it is formless.[80] This critique has had ripple effects that are myriad and varied. Some researchers have argued that judges—consciously or subconsciously—have applied *Daubert* in unequal ways in criminal and civil trials, leading to inequitable outcomes.[81] They argue that plaintiffs in civil trials, particularly toxic tort trials against major corporations, are much more likely to have their scientific evidence excluded,[82] whereas forensic evidence used by prosecutors in criminal trials is routinely admitted into ev-

77. 509 U.S. 579 (1993); *see* STRENGTHENING FORENSIC SCIENCE, *supra* note 32, at 10 ("In sum, *Daubert*'s requirement that an expert's testimony pertain to 'scientific knowledge' established a standard of 'evidentiary reliability.'" (citing *Daubert*, 509 U.S. at 589, 590 n.9, 595)).

78. Before *Daubert*, the prevailing test for determining the reliability of expert testimony required judges to determine whether the scientific expertise at issue was generally accepted within the relevant scientific community. *See* Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923) (affirming the trial judge's decision to exclude certain expert testimony).

79. For an application of the *Daubert* framework, see *Daubert*, 509 U.S. at 590. Many state courts later adopted the *Daubert* framework in their jurisdictions, as illustrated in Williams v. Hedican, 561 N.W.2d 817, 827–28 (Iowa 1997) and State v. Coon, 974 P.2d 386, 388, 395 (Alaska 1999). *See also* Paul C. Giannelli, Daubert *and Forensic Science: The Pitfalls of Law Enforcement Control of Scientific Research*, 2011 U. ILL. L. REV. 53, 60–64 (2011) (explaining the impact of *Daubert* on state and federal courts).

80. *See* Peter B. Oh, *The Proper Test for Assessing the Admissibility of Nonscientific Expert Evidence Under Federal Rule of Evidence 702*, 45 CLEV. ST. L. REV. 437, 450 (1997) (discussing how courts have interpreted *Daubert* inconsistently).

81. *See* LLOYD DIXON & BRIAN GILL, CHANGES IN THE STANDARDS FOR ADMITTING EXPERT EVIDENCE IN FEDERAL CIVIL CASES SINCE THE *DAUBERT* DECISION 25–29 (2002) (examining "how frequently evidence is found unreliable" in the time since *Daubert*).

82. *Id.* at 28–29.

idence, despite significant concerns within the scientific community over the validity of those forensic techniques.[83] Other researchers have criticized the ability of judges to understand and correctly apply the *Daubert* factors. A recent study suggests that although state judges understand and can apply the *Daubert* factors that were relevant to the *Frye*-era inquiry regarding scientific evidence—whether it has been peer reviewed and enjoys the support of the scientific community—these judges failed to understand and apply correctly the concepts of scientific testability and error rates.[84] Still others criticize the heterogeneity of verdicts that results under *Daubert* because of the abuse of discretion standard that prevails on appeal.[85]

Majoritarian bodies such as legislatures have also proposed jury-shielding measures designed to bolster the credibility of scientific evidence in the courtroom. In addition to amending Federal Rule of Evidence 702 to largely reflect the Supreme Court's *Daubert* decision, Federal Rule 701 sets up a dividing line between lay witness opinion and expert opinion, which is subject to greater scrutiny.[86] Federal Rule 703 provides a framework for limiting the basis of an admissible expert's opinion, for example, by limiting it only to information upon which experts in the relevant field would routinely rely.[87]

The Rules of Evidence, like the *Daubert* test, also suffer from several drawbacks and criticisms. The line between lay witness opinion and expert opinion as described in Federal Rule of Evidence 701 can be murky, which may allow for an expert 'wolf in sheep's clothing' to testify to scientific expertise under the guise of an unvetted lay witness.[88] Rule 702 falls prey to the same interpretation problems that affect the Supreme Court's *Daubert* decision, including the selective application and misapplication of admissi-

83. *See* Giannelli, *supra* note 79, at 64–65 (noting that post-*Daubert* decisions raised concerns in the scientific community "about how science was being used in criminal cases").

84. *See* Beecher-Monas, *supra* note 66, at 68–72 (noting that despite efforts to explain scientific principles and error rates to judges, "[i]n the four years since *Daubert*, the results admittedly have been uneven").

85. *Compare* Easum v. Miller, 92 P.3d 794, 803–04 (Wyo. 2004) (reversing and remanding the lower court's decision and holding the accuracy of the doctor's differential diagnosis is a jury question), *with* Moore v. Ashland Chem. Inc., 151 F.3d 269, 279 (5th Cir. 1998) (on comparable facts, upholding the trial court's ruling excluding the expert testimony).

86. *See* FED. R. EVID. 701 (detailing the distinction between lay witness opinion and expert opinion and characterizing lay opinion as "not based on scientific, technical, or other specialized knowledge").

87. *See* FED. R. EVID. 703 ("If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted.").

88. *See* Daniel J. Capra, *The Daubert Puzzle*, 32 GA. L. REV. 699, 769 (1998) ("Yet this laissez-faire attitude runs the risk of permitting a party to evade the *Daubert* requirements through the simple expedient of proffering an expert in lay witness clothing.").

bility criteria.[89] Judges also have different conceptions of the scope of Rule 703, and frequently disagree on whether an expert's opinion relies upon information that is routinely relied upon in that expert's field.[90]

In sum, measures designed to keep potentially unreliable scientific evidence from the factfinder through the promulgation of tougher admissibility standards have met with mixed success. But other measures have been suggested that take a different approach, consistent with a different view of the factfinder's ability to analyze complex scientific evidence.

2. "Assist-the-Factfinder" Solutions

Other solutions for improving the integrity of trials involving scientific evidence have been proposed by policymakers who believe that, instead of withholding such evidence from factfinders entirely, factfinders should be provided with appropriate tools to better understand the evidence. Perhaps the most controversial of these solutions are the aptly-named "jury trial innovations" which have largely originated from researchers at the Arizona Jury Project.[91] Drawing from empirical findings in social psychology, these proposals change the factfinder's role from passive observer to active participant.[92] For example, the researchers advocate allowing jurors to take notes during complex trials, ask clarification questions to witnesses, and discuss the case with each other before deliberating.[93] They also advocate simplifying jury instructions, limiting the amount of time each party can present evidence in one sitting, using demonstrative evidence to clarify difficult scientific concepts, and allowing jurors to engage in some degree of deliberation before casting their votes in the case.[94] These policymakers

89. *Id.* at 713.

90. *Id.* at 774–78.

91. *See* Justin Sevier, *The Unintended Consequences of Local Rules*, 21 CORNELL J.L. & PUB. POL'Y 291, 293 (2011) (discussing the "jury trial innovations").

92. *Id.* at n.4.

93. *Id.*; *see generally* JURY TRIAL INNOVATIONS (G. Thomas Munsterman et al. eds., 1997).

94. *See* Martin J. Bourgeois et al., *Nominal and Interactive Groups: Effects of Preinstruction and Deliberations on Decisions and Evidence Recall in Complex Trials*, 80 J. APPLIED PSYCHOL. 58, 58 (1995) (proposing that substantive preinstruction to juries before deliberation "may enhance jurors' competence in complex cases"); Neil P. Cohen, *The Timing of Jury Instructions*, 67 TENN. L. REV. 681, 681 (2000) (advocating for a neutral standard in limiting timing of jury instructions based on helpfulness and administrability); B. Michael Dann et al., *Can Jury Trial Innovations Improve Juror Understanding of DNA Evidence?*, 90 JUDICATURE 152, 155 (2007) (suggesting that notetaking helps jurors remember and understand the case); Shari Seidman Diamond et al., *Juror Discussions During Civil Trials: Studying an Arizona Innovation*, 45 ARIZ. L. REV. 1, 4 (2003) (introducing the implications of jurors discussing the trial together before deliberations); Nancy S. Marder, *Bringing Jury Instructions into the Twenty-First Century*, 81 NOTRE DAME L. REV. 449, 454–55 (2006) (suggesting a change in jury instructions based on empirical evidence that most are difficult for jurors to understand); Nicole L. Mott, *The Current Debate on*

reason that, to the extent that courts can streamline the evidence presented to jurors and allow jurors to enter deliberations with a clear understanding of the evidence, jurors' ability to accurately and equitably decide cases involving scientific evidence should be improved.[95]

This approach, however, faces limitations. Although the Arizona Jury Project has made great strides in getting policymakers to consider outside-the-box solutions to the scientific evidence crisis, the empirical findings are complex at best.[96] For example, some of these findings are the result of self-reported perceptions of competency and not with actual efficacy;[97] those that do examine the actual efficacy of these jury trial innovations are often difficult to interpret;[98] and some of these innovations might lead to unintended consequences that suggest these innovations might be less efficacious than the research suggests.[99] Moreover, the manner in which these innovations have been implemented is potentially troubling. Innovations such as jury notetaking fall under the purview of local court rules, which are largely unregulated and unstandardized; some judges experiment with them while others do not.[100] This may lead to serious concerns of accuracy and equity if two identically situated litigants face different decisionmakers and receive different verdicts.[101]

Alternatively, policymakers have proposed solutions to aid judges in their understanding of scientific expertise that is admitted into evidence. Each of these solutions is controversial, and focuses on the nature of the expert involved in the case. Under Federal Rule of Evidence 706, the court may, on the motion of the parties or on its own motion, appoint an expert witness of its own choosing (or one that the parties have nominated) in addition to any experts that the parties have proffered.[102] More controversially, the court also has the power under its inherent authority to engage the services of a technical advisor, a shadow expert who does not testify at tri-

Juror Questions: "To Ask or Not to Ask, That Is the Question," 78 CHI.-KENT L. REV. 1099, 1099 (2003) (discussing whether jurors should or should not be able to ask questions during trial).

95. Marder, *supra* note 94, at 498.

96. Sevier, *supra* note 91, at 338.

97. *Id.* at 312–13.

98. *See* Diamond et al., *supra* note 94, at 40 (acknowledging that "it is difficult to provide a quantitative assessment" of a study of jurors due to the "disparate fact patterns and different sets of jurors").

99. Sevier, *supra* note 91, at 338.

100. *Id.* at 339.

101. *Id.* at 340.

102. FED. R. EVID. 706. For a thorough discussion of Rule 706 jurisprudence see Sophia Cope, *Ripe for Revision: A Critique of Federal Rule of Evidence 706 and the Use of Court-Appointed Experts*, 39 GONZ. L. REV. 163, 165–66 (2004) (arguing that "a revision of Rule 706 is necessary given that science and technology continue to advance and become more complex, thus presenting judges and juries with increasingly challenging cases").

al—and whose identity need not be disclosed by the judge—who educates the judge with respect to the scientific issues involved in the case.[103] Perhaps most controversially, policymakers have proposed that judges consult with panels of several experts to create expert pools of scientifically and judicially vetted experts whose services may be needed by parties to litigation in that judge's court.[104]

Judges, however, rarely implement these proposals.[105] Although no empirical study has been done, judges are likely reluctant to use these tools because (1) other judges do not use them; and (2) they might be concerned that imposing on the trial an expert of their choosing and forcing the parties to choose from a pre-selected group of experts, or using an "off the grid" expert who is unknown to both parties, raises serious issues of procedural fairness and due process.[106]

There is, however, one other controversial solution that was proposed in the early 1970s and stirred vigorous debate over the course of two decades.[107] This proposal would remove especially complex scientific trials from courts of general jurisdiction into a tribunal that is specially designed to efficiently and accurately adjudicate these disputes.[108] This proposal came to be known as the "science court."[109] Its complex history, the debate that it inspired, and its failure to ultimately gain traction provide an educational case study in institutional design.[110] But beyond that, in an era in which significant swaths of scientific evidence have come under attack from legal actors, academics, and other policymakers, a redesigned science court might be the solution for which these policymakers are searching.

B. The Science Court

The science court proved to be the most controversial of the proposals to ensure the integrity of scientific evidence in American trials,[111] and for

103. For a discussion of a court-appointed advisor's inherent power see Sofia Adrogué & Alan Ratliff, *The Independent Expert Evolution: From the "Path of Least Resistance" to the "Road Less Traveled?"*, 34 TEX. TECH L. REV. 843, 885 (2003) (exploring the various provisions governing a special master under Rule 53 of the Federal Rules of Civil Procedure).

104. MICHAEL J. SAKS & RICHARD VAN DUIZEND, THE USE OF SCIENTIFIC EVIDENCE IN LITIGATION 95–96 (1983).

105. STEPHEN BREYER, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 7–8 (2d ed. 2000), *available at* https://bulk.resource.org/courts.gov/fjc/sciman00.pdf.

106. Jurs, *supra* note 37, at 21–24.

107. *Id.* at 2–3.

108. *Id.*

109. *Id.* at 3.

110. *Id.*

111. *See* John Noble Wilford, *Science Considers Its Own 'Court*,' N.Y. TIMES, Feb. 29, 1976, at E8 (discussing alternative proposals and summarizing some of the most controversial issues relating to the science court).

good reason. Rather than simply shielding certain types of evidence from factfinders or giving them tools to better evaluate scientific evidence within the status quo and adversarial model of legal decisionmaking, the science court would alter the process of making decisions about scientific evidence entirely. Proponents of the science court argue for creating an entirely separate court with special jurisdiction to hear complex scientific disputes, with either "special" judges or "special" jurors making the decisions.[112]

The specialty court as a decisionmaking institution has been slowly gaining momentum since the founding of the Republic.[113] For example, the Delaware Court of Chancery, established in 1792, is considered the preeminent decisionmaking body to adjudicate disputes arising out of complex business transactions.[114] Moreover, the popularity of specialized business courts has risen steadily, with many states currently creating specialized business courts within their jurisdiction.[115] Similar trends are evident in the area of patent and trademark disputes.[116] The United States Court of Appeals for the Federal Circuit, established in 1982, is widely considered to be the benchmark in legal decisionmaking over intellectual property matters;[117] and like its business court counterpart, it too has spawned intellectual property specialization in various state and federal district courts.[118] And finally, commentators have described the United States Bankruptcy Court, which was established in 1978 and has jurisdiction over all cases arising under the United States Bankruptcy Code, as "a success by all measures"[119] and "an example of successful specialized adjudication."[120]

Against this background, it is conceivable that a specialized science court—if it were designed to maximize its acceptance by the public—could enjoy a similar degree of success. To understand why the previous science court proposals ultimately failed to muster sufficient popular and political

112. Jurs, *supra* note 37, at 9–10.

113. *Id.* at 24.

114. *Id.*; *see also* Anne Tucker Nees, *Making a Case for Business Courts: A Survey of and Proposed Framework to Evaluate Business Courts*, 24 GA. ST. U. L. REV. 477, 480–82 (2007) (discussing history of business courts).

115. Jurs, *supra* note 37, at 25; *see also* The Bankruptcy Reform Act of 1978, Pub. L. No. 95-598, 92 Stat. 2549 (1978) (illustrating the structure and success of a specialized bankruptcy court).

116. *See* Matthew G. Jacobs & Michael S. Mireles, *The Intersection of Intellectual Property and Antitrust Law:* In re *Independent Service Organizations Antitrust Litigation*, 15 TRANSNAT'L LAW. 293, 297 (2002) (describing the creation of the United States Court of Appeals for the Federal Circuit, which has exclusive jurisdiction over patent appeals).

117. *Id.*

118. *See, e.g.*, Nancy Olson, *Does Practice Make Perfect? An Examination of Congress's Proposed District Court Patent Pilot Program*, 55 UCLA L. REV. 745, 747–49 (2008) (discussing patent specialization trends in U.S. courts).

119. Jurs, *supra* note 37, at 26.

120. REPORT OF THE FEDERAL COURTS STUDY COMMITTEE 74 (1990), *reprinted in* 22 CONN. L. REV. 733 (1990).

support, it is worth first examining their components and the sociocultural forces that led to them.

1. The Precursor: The "Political" Science Court

The turbulent 1960s and '70s proved to be a microcosm for change and upheaval.[121] This was also true with respect to public scientific discourse.[122] In the late 1960s, there was growing discontent that discussions about science as it related to public policy were becoming increasingly politicized and obfuscated by adversaries in the political debate.[123] In response to this growing problem, Arthur Kantrowitz wrote two influential articles that appeared in *Science* and the *American Scientist* advocating for a process that would "institutionalize" the debate over scientific issues and free that debate from political and sociocultural distortion.[124] His proposal would later come to be known as a political "science court."[125]

The crux of Kantrowitz's proposal in *Science* was threefold.[126] First, the political "science court" would purify scientific debate by teasing out questions of objective scientific fact from those that involve political and cultural value judgments.[127] Second, the court would consist of experts—separate from advocates—who would devote their time and resources to evaluating those objective scientific facts.[128] Third, the results from the science court's decision would be published and available for public review.[129]

Kantrowitz tweaked this model when he proposed this idea a few years later in the *American Scientist*.[130] Most importantly (and controversially), he included an element of cross-examination in his modified proposal, in

121. *See, e.g.*, Allan Mazur, *The Science Court: Reminiscence and Retrospective*, 4 RISK 161, 161 (1993) (depicting the post-Watergate era as "a contentious time with debates in all arenas flaring one month and fading a short time later").

122. *See id.* (noting the "combative stance" adopted by many in the fields of natural and social sciences).

123. *See id.* at 161–62 ("To the public (including me), technical expertise seemed no more reliable than psychiatric witnesses in a courtroom whose 'scientific objectivity' often has the appearance of a chimera.").

124. *See, e.g.*, Arthur Kantrowitz, *Proposal for an Institution for Scientific Judgment*, 156 SCI. 763, 763–64 (1967) [hereinafter Kantrowitz, *Proposal*] (recommending a threefold proposal to institutionalize a decisionmaking process shielded from ethico-political norm encroachment but open to public commentary); *see also* Arthur Kantrowitz, *Controlling Technology Democratically*, 63 AM. SCIENTIST 505, 508 (1975) [hereinafter Kantrowitz, *Controlling Technology*] (proposing that "Congress create, on an experimental basis, an institution for scientific judgment").

125. *See* Mazur, *supra* note 121, at 164 (noting that Kantrowitz "never cared for the name").

126. *See* Kantrowitz, *Proposal*, *supra* note 124, at 763 (offering three recommendations to help address the problematic politicization of science).

127. *Id.*

128. *Id.* at 763–64.

129. *Id.* at 764.

130. *See supra* note 124 and accompanying text.

which science advocates would be permitted to expose weaknesses in their adversary's evidence.[131] This set the stage for a lengthy and high-profile debate over how to evaluate science in the public discourse.[132]

Kantrowitz's proposal enjoyed political momentum in the period before the election of 1976.[133] President Ford supported the proposal and his administration created a task force to evaluate the proposal further.[134] This task force released a favorable interim report, made recommendations to refine the proposal, and announced its intention to convene a public hearing on the science court, in which legal and scientific policymakers could comment on the proposal more fully.[135]

In the fall of 1976, just two months before the presidential election, the task force convened a contentious public hearing in Leesburg, Virginia.[136] Among the various suggestions from the participants was the need for a "test case" to examine the viability of a political science court.[137] That may have been, however, all upon which the participants agreed.[138] Significant criticisms of the political science court emerged ranging from the philosophical—for example, doubt that objective scientific facts could really be separated from sociopolitical questions of morality,[139] and a concern that providing "finality" to scientific disputes is anathema to the scientific method[140]—to the practical—for example, a concern that incorporating cross-examination would increase expenses and interfere with the process of determining the "true" scientific facts.[141] Bluntly, critics of the political science court labeled it "profoundly naïve, internally inconsistent, and inherently unworkable."[142]

Despite the proposal's broad-based support, as the 1976 presidential election passed and the Ford Administration gave way to President James

131. *See* Kantrowitz, *Controlling Technology*, *supra* note 124, at 507. For a defense of the Kantrowitz proposal in the context of extending many of its elements into legal proceedings, see John Thibaut & Laurens Walker, *A Theory of Procedure*, 66 CALIF. L. REV. 541, 563–65 (1978).

132. *See supra* note 111 and accompanying text.

133. *See* Mazur, *supra* note 121, at 163–65 (highlighting the political support received by the science court during the Ford Administration).

134. *Id.* at 163.

135. *Id.* at 164–65.

136. *Id.*

137. *Id.* at 165.

138. *Id.*

139. *See* Jurs, *supra* note 37, at 12 (describing challenges to the idea that scientific facts can be effectively separated from political and moral value judgments); *see also* Wilford, *supra* note 111 (noting criticisms including that judges cannot be trusted to be impartial and that decisionmaking processes cannot escape a value-judgment component).

140. *See* Jurs, *supra* note 37, at 14 (describing critics' fears "that the court would bring an authoritarian finality to scientific inquiry" that would hinder debate).

141. *Id.* at 13.

142. *Id.* at 12.

Carter's administration, political winds shifted against the political "science court."[143] The Carter Administration was much less enthusiastic about the proposal, and the test case for the proposal never materialized.[144] As quickly as it began, the political "science court" experiment had ended.

2. The Proposal: The "Judicial" Science Court

Although the political science court stalled as the nation headed into the Reagan-era 1980s, a new permutation of the court was incubating. The proposal for a science court in the political arena may have encountered lofty philosophical roadblocks, including its likely inability to tease out objective scientific facts from moral and political questions,[145] but it was not clear that this problem would be relevant to evaluating *legal* disputes over scientific evidence. This led legal researchers to the conclusion that a judicial science court might be different in kind from a body that adjudicates science disputes in the political realm.[146] The proposal for the judicial science court was born.

The judicial science court actually consisted of two distinct proposals that can be thought of as variations on the same central theme: select the factfinder—whether the factfinder is a judge or a jury—for scientific expertise. The proposals sought to accomplish this goal, however, in markedly different ways. The first science court proposal, by William Luneburg and Mark Nordenberg, came in 1981.[147] Luneburg and Nordenberg actually offered twin designs.[148] The first design would require juries in complex scientific cases to be composed not of a purely representative cross-section of the local community, but rather of a special "blue ribbon" jury consisting of college-educated men and women.[149] Luneberg and Nordenberg argued that by "specializing" the jury in these cases, the law could increase decisional accuracy while preserving—at least in some sense—the important procedural safeguard of having a trial by jury.[150]

143. *See* Mazur, *supra* note 121, at 165 (explaining that although the Carter Administration was not "hostile" to the notion of a science court, it "had other priorities").

144. *Id.*

145. *See supra* note 139 and accompanying text.

146. *See* William V. Luneburg & Mark A. Nordenberg, *Specially Qualified Juries and Expert Nonjury Tribunals: Alternatives for Coping with the Complexities of Modern Civil Litigation*, 67 VA. L. REV. 887, 942 (1981) (suggesting that "[t]he use of special juries . . . could strike a sensible compromise if selection procedures were designed to improve juror competence without so dramatically altering the jury's make-up that it is deprived of its distinguishing characteristics").

147. *See supra* note 146 and accompanying text.

148. Luneburg & Nordenberg, *supra* note 146, at 899.

149. *Id.* at 899 n.63, 942–50.

150. *Id.* at 947–48.

The proposal was bold but problematic, and the problems were both practical and philosophical. In federal and state court, the pool from which potential jurors are selected—the jury "venire"—is required to consist of a representative cross-section of the surrounding community.[151] To understand why courts routinely require the jury pool to be representative requires thinking about why jury trials exist at all. Although one function of the jury is to root out "the facts of the matter" through rigorous debate among multiple people,[152] this is not the jury's sole function. The jury can also be conceived of as a buffer against a potentially overreaching government and one that passes judgments imbued with the common sense values of the local community.[153] If we think of juries that way, Luneburg and Nordenberg's proposal becomes controversial for posing a threat against this buffer and the common sense arguably reflected in cross-sectional representation.[154] Moreover, other commentators have noted the practical difficulty of selecting juries consisting solely of college-educated jurors, particularly in rural state-court jurisdictions.[155] Perhaps because of these formidable philosophical and practical difficulties, this portion of Luneburg and Nordenberg's proposal failed to gain traction.[156]

Perhaps anticipating the difficulties associated with blue ribbon, college-educated juries deciding complex scientific cases, Luneburg and Nordenberg offered an alternative proposal.[157] This proposal, however, proved to be even more controversial. Luneburg and Nordenberg proposed eliminating the jury altogether in complex scientific civil trials and instead requiring the dispute to be adjudicated by panels of qualified, science-savvy administrative judges.[158] On its face, this approach may appear patently un-

151. *Id.* at 916–22 (tracing Supreme Court history of the affirmation of the requirement of cross-sectionalism in jury selection).

152. *See* Jeffrey Abramson, *Two Ideals of Jury Deliberation*, 1998 U. CHI. LEGAL F. 125, 125 (1998) (describing how the jury is often pointed to as exemplar of the deliberative democratic ideal).

153. *See* JEFFREY B. ABRAMSON, WE, THE JURY: THE JURY SYSTEM AND THE IDEAL OF DEMOCRACY 31–32 (2000) (citing the colonial view of jury members as protectors of citizens' rights and suggestion that "local knowledge of the condition of the people compensated for the lack of formal legal training").

154. *See supra* note 149 and accompanying text.

155. *See* Jarod S. Gonzalez, *A Custom Fit: Tailoring Texas Civil Jury Selection Procedures to Case Tiers*, 43 ST. MARY'S L.J. 495, 551 (2012) (noting, however, that this notion helps fashion a case for smaller jury panels).

156. *See* Jurs, *supra* note 37, at 3 ("Since the demise of Kantrowitz's proposal in the late 1970's, legal scholars [including Luneburg and Nordenberg] have proposed several other, more limited, science court systems with varying structures and subjects, but the issue has faded and has received limited scholarly consideration for several decades.").

157. Luneburg & Nordenberg, *supra* note 146, at 950–51 (introducing the proposal of the use of expert nonjury tribunals).

158. *See id.* at 950–52 (describing the proposal for expert nonjury tribunals).

constitutional, but historically there has been a real debate over whether to take complex cases away from the jury and put them in the hands of specialized judges.[159] This debate has received increased attention recently both in the United States and abroad.[160]

In England, for example, a 2007 bill to eliminate the jury in cases involving complex fraud transactions passed the British House of Commons before ultimately being defeated in the House of Lords.[161] In the United States, the Supreme Court created significant confusion in the lower courts when, in a footnote in its decision in *Ross v. Bernhard*,[162] it stated that the application of the Seventh Amendment right to a civil jury trial depends on, among other things, "the practical abilities and limitations of juries."[163] This footnote caused considerable heartburn in the U.S. Courts of Appeals for the Third and Ninth Circuits, which interpreted the Supreme Court's language very differently.[164] Later Supreme Court opinions have not fully clarified the state of the law,[165] and considerable scholarly debate continues regarding whether jurors' cognitive capacity is a legitimate basis by which to limit the federal right to a civil jury trial.[166] Nonetheless, the instability of the law regarding the Seventh Amendment jury trial was likely a contributing factor to the failure of Luneburg and Nordenberg's alternative proposal to gain public support.

The second science court proposal came from Troyen Brennan in the late 1980s.[167] Brennan's model was similar to Luneburg and Nordenberg's model, but was much more specialized.[168] Brennan argued for a scientific complexity "carve out" from trial by jury to a panel of administrative judg-

159. *See* Miller, *supra* note 33, ¶¶ 19–21 (describing colonial support for a version of the complexity exception).

160. *Id.* ¶ 1.

161. *Lords Defeat No-Jury Trials Plan*, BBC NEWS (Mar. 20, 2007, 21:37 GMT), http://news.bbc.co.uk/2/hi/uk_news/politics/6472755.stm.

162. 396 U.S. 531 (1970).

163. *Id.* at 538.

164. *Compare In re* Japanese Elec. Prods. Antitrust Litig., 631 F.2d 1069, 1086 (3d Cir. 1980) (holding, post-*Ross*, that the abilities and limits of jurors may be a limiting condition of suits subject to the Seventh Amendment), *with In re* U.S. Fin. Sec. Litig., 609 F.2d 411, 425 (9th Cir. 1979) (finding that one footnote is not enough to protect the complexity exception as constitutional).

165. *See, e.g.*, Weltzin v. Nail, 618 N.W.2d 293, 298 (Iowa 2000) (narrowing the applicability of *Bernhard* because the Seventh Amendment is not incorporated against the states).

166. *See, e.g.*, Troyen A. Brennan, *Helping Courts with Toxic Torts: Some Proposals Regarding Alternative Methods for Presenting and Assessing Scientific Evidence in Common Law Courts*, 51 U. PITT. L. REV. 1, 62–71 (1989) (defending in detail a science board proposal).

167. *Id.* at 2–3.

168. *Id.* (clarifying that "I will restrict myself to problems of causation which arise when scientific evidence is presented to courts by expert witnesses. My specific task will be to outline some realistic alternatives for helping judges and juries evaluate the scientific causal connections").

es not in all scientifically complex cases, but in a discrete area of the law: toxic torts.[169] Brennan argued that, as an empirical matter, toxic tort cases are particularly susceptible to decisional errors by jurors, and so an administrative or regulatory body could give coherence to this area of law by improving the efficiency, accuracy, and consistency of verdicts involving toxic torts.[170] Brennan's proposal, however, was in many ways a smaller-scale version of Luneburg and Nordenberg's proposal, and suffered from many of the same drawbacks.[171] Perhaps it is no surprise that Brennan's proposal also failed to garner significant popular appeal.

In sum, the judicial science court—modeled on Kantrowitz's proposal of a "political" science court—would focus primarily on improving the accuracy of legal decisions not by "purifying" the evidence that enters the court, but by selecting decisionmakers with a propensity to more carefully and correctly evaluate complex scientific evidence. This proposal has failed to gain popular support and continues to remain a distant possibility for how to resolve the rising scientific evidence crisis in American courts.[172] As I argue below, this approach to the science court was too narrow in scope, failed to consider (as a matter of institutional design) the psychological factors that lead the public to support decisionmaking bodies, and failed to maximize those factors accordingly. The next section lays out the framework for this argument and then tests it empirically through a series of original experiments.

III. WHY THE SCIENCE COURT PROPOSAL FAILED

The science court experiment did not have to fail. But the proposal, although well intentioned and innovative, was ultimately blind to principles of psychology that would have lent it considerable popular legitimacy. I detail those psychological principles below.

A. Acceptance as a Function of Accuracy and Legitimacy

The science court proposals of the 1970s and 1980s shared a common thread, which proved to be their biggest drawback. The proposals sought to improve the ability of the decisionmaker—through blue ribbon juries or panels of expert judges—to make smarter decisions about scientific evidence. But these proposed improvements came with substantial tradeoffs. Important procedural safeguards would be eliminated, including the repre-

169. *Id.*

170. *Id.* at 19–20.

171. *See* Jurs, *supra* note 37, at 18–19 (explaining how, like the predecessor Luneburg and Nordenberg proposal, the Brennan proposal did not ultimately receive significant consideration).

172. *See supra* note 156 and accompanying text.

sentative jury or, alternatively, the jury trial altogether. Moreover, the proposals would have scaled back these procedural safeguards and would have done little to change the quality of the input to the decisionmaker—the evidence itself. Thus, in addition to reducing litigants' procedural protections, the proposals would not have maximized the ability of the science court to issue accurate decisions.

To explore how the architects of the science court got it wrong, we should think of decisionmaking systems along a continuum in which, at one extreme, the parties have complete control over the inputs—the presentation of the evidence—to the decisionmaker, and at the other extreme, the decisionmaker retains complete control over the inputs by gathering evidence without the assistance of attorneys.[173] The American trial model—which we call the adversarial model because each party's adversary produces its own evidence and reveals the weaknesses of his opponent's evidence[174]—is closer on the continuum to the former, while the inquisitorial model favored by foreign countries—in which judges appoint their own experts or investigators to collect the evidence that is evaluated[175]—is closer on the continuum to the latter.[176] To the extent that science court proposals move away from the pure adversarial model (consisting of the traditional trial by jury) toward a more inquisitorial design, policymakers should examine whether the move along this continuum necessitates a trade-off between competing values. I argue that this is indeed what occurs; as policymakers design a system that moves from a more adversarial paradigm to one that contains elements of the inquisitorial paradigm, policymakers are choosing between two distinct psychological values: decisional accuracy and procedural legitimacy.[177]

Decisional accuracy refers to the ability of a factfinder to apply the correct facts to the applicable law.[178] Legal scholars have argued that the ability of a factfinding paradigm to produce decisionally accurate decisions

173. *See generally* JOHN W. THIBAUT & LAURENS WALKER, PROCEDURAL JUSTICE: A PSYCHOLOGICAL ANALYSIS 1–5 (1st ed. 1976) (describing and analyzing studies focused on the distribution of control in dispute resolution).

174. *See generally* Monroe H. Freedman, *Our Constitutionalized Adversary System*, 1 CHAP. L. REV. 57, 57–58 (1998) (describing the United States' adversarial system).

175. *See* BLACK'S LAW DICTIONARY 1846 (9th ed. 2009) (defining inquisitorial system).

176. *See* Freedman, *supra* note 174, at 74 (noting that the "lawyers' role is minimal" in the inquisitorial model).

177. *See infra* Part VI.

178. *See* John J. Capowski, *Accuracy and Consistency in Categorical Decision-Making: A Study of Social Security's Medical-Vocational Guidelines—Two Birds with One Stone or Pigeon-Holing Claimants?*, 42 MD. L. REV. 329, 331–32 (1983) ("Accuracy can be defined as the proper substantive outcome in a case based upon correctly found facts appropriately applied to the proper standard of law.").

is not equal across the decisionmaking continuum.[179] Scholars have suggested that an inquisitorial paradigm, in which an unbiased factfinder gathers evidence by appointing impartial investigators and expert witnesses, is likely to lead to greater decisionmaking accuracy than does the adversarial paradigm.[180] These scholars argue that, because biased advocates control the presentation of the evidence in the adversarial paradigm, the evidence that the factfinder considers is biased to a degree that cross-examination—one of the central features of the adversarial model—cannot adequately remedy.[181]

Differential control over the evidence is precisely what distinguishes the adversarial and inquisitorial systems with respect to the related, but distinct, concept of procedural legitimacy.[182] Procedural legitimacy refers to the willingness of a litigant to abide by a decisionmaker's judgment independent of the outcome of the dispute.[183] As discussed in more detail in Section III.C, scholars argue that because litigants in the adversarial system—compared to the inquisitorial system—have greater control over the presentation of the evidence, they will perceive the decisionmaker to be more procedurally legitimate, which, in turn, will make them more likely to abide by those decisions.[184]

Thus, the figure below illustrates the relationship between the inquisitorial and adversarial decisionmaking systems as a function of these two distinct psychological concepts. Moving across the Cartesian plane from left to right signifies an increase in a decisionmaking paradigm's procedural legitimacy, while moving from the bottom to the top of the plane symbolizes increased decisional accuracy. Thus, to use an extreme example, deci-

179. *See* THIBAUT & WALKER, *supra* note 173, at 2–3 (suggesting that it is almost impossible to accurately assess the system differences that exist between the American and European legal processes).

180. *Id.*

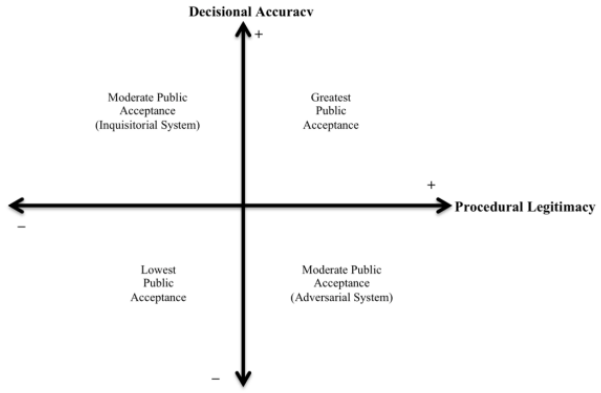
181. *See* E. Allan Lind, John Thibaut & Laurens Walker, *Discovery and Presentation of Evidence in Adversary and Nonadversary Proceedings*, 71 MICH. L. REV. 1129, 1143 (1973) (concluding that the adversarial system is systematically biased based on how evidence is presented). *But see* John Thibaut, Laurens Walker & E. Allan Lind, *Adversary Presentation and Bias in Legal Decisionmaking*, 86 HARV. L. REV. 386, 389–90 (1972) (noting the argument that sometimes the adversary system will lead to greater decisional accuracy because biased advocates "vet" the evidence more thoroughly than do unbiased investigators).

182. *See* THIBAUT & WALKER, *supra* note 173, at 3 (distinguishing procedural justice from other concepts such as distributive justice).

183. *See* David Marcus, *From "Cases" to "Litigation" to "Contract": A Comment on Stability in Civil Procedure*, 56 ST. LOUIS U. L.J. 1231, 1231 (2012) (defining "procedural legitimacy" as "the potential of civil processes to function fairly, accurately, efficiently, and appropriately in a democratic system of government").

184. *See* Josh Bowers, *The Normative Case for Normative Grand Juries*, 47 WAKE FOREST L. REV. 319, 357–58 (2012) (concluding that participation in the litigation process enhances perceptions of the outcome's legitimacy).

sionmaking bodies such as the ordeals of the middle ages—which today's scholars believe to signify virtually no procedural legitimacy or decisional accuracy—would fall in the bottom left of the plane. A "pure" inquisitorial system, which I hypothesize increases perceptions of decisional accuracy but decreases perceptions of procedural legitimacy, would fall in the top left of the plane. A "pure" adversarial system, however, would fall in the lower right of the plane, because it increases perceptions of procedural legitimacy at the cost of perceived decisional accuracy. Finally, an ideal decisionmaking paradigm, which I argue embodies elements of both the adversarial and inquisitorial systems, would fall in the upper-right corner of the plane.



In sum, my argument—which I support with empirical evidence from original experiments[185]—is that different decisionmaking paradigms highlight different psychological values.[186] Thus, the science court proposal that will enjoy the greatest public support will include both adversarial and inquisitorial features.

Before reporting the results of the four original experiments I offer in support of my proposal, it is worth briefly discussing what exactly is meant by the terms "decisional accuracy" and "procedural legitimacy," delineating their component parts, and discussing how different decisionmaking systems are likely to differ on those dimensions.

185. *See infra* Part IV.

186. *See infra* Part V.

B. Decisional Accuracy

Decisional accuracy is defined as the ability of the factfinder to apply the correct facts to the appropriate law when making legal decisions.[187] The process of making accurate decisions is two-fold and exceedingly difficult.[188] First, the factfinder must make correct determinations about the facts, which proves to be a challenging, multi-step endeavor.[189] The factfinder must first correctly comprehend all of the facts of the case.[190] From there, the factfinder must choose which facts are the most relevant to resolving the dispute and which are not.[191] Beyond that, the factfinder must also decide which relevant facts are credible and which are not.[192] And even then, the factfinder must decide which version of the competing narratives about those relevant, credible facts is the most likely to be true.[193] Any mistake at any point in this process diminishes the factfinder's ability to render an accurate decision.[194]

Second, even if the factfinder successfully creates a narrative that accurately reflects the true facts of the legal dispute, the factfinder must then apply these facts to the law.[195] Again, difficulties abound.[196] The factfinder first must correctly identify the law or laws that govern the dispute.[197] The factfinder must then not only comprehend the meaning of the law, but also must understand how to apply its principles to the facts of the case.[198] Finally, the factfinder must be able to translate the application of the correct law to the correct facts into an appropriate verdict.[199] As before, any mistake in this process—or in the fact-evaluation process—jeopardizes the factfinder's likelihood of rendering an accurate decision.[200]

This multi-step process of achieving decisional accuracy is fraught with peril.[201] This likely explains why behavioral researchers have found, frequently, that both judges and juries experience difficulty in rendering ac-

187. John R. Allison, *A Process Value Analysis of Decision-Maker Bias: The Case of Economic Conflicts of Interest*, 32 AM. BUS. L.J. 481, 491–93 (1995) (defining decisional accuracy as "when the decision maker's inferences are as close as possible to actual events").

188. *Id.* at 492.

189. *Id.*

190. *Id.*

191. *Id.*

192. *Id.*

193. *Id.*

194. *Id.*

195. *Id.*

196. *Id.* at 494–95.

197. *Id.* at 492.

198. *Id.*

199. *Id.*

200. *Id.*

201. *Id.* at 491–95 (describing the complexities of the decisionmaking process).

curate decisions.[202] Research suggests that, particularly in scientifically complex cases, the cognitive load imposed on factfinders by the nature of the evidence may compromise their comprehension of that evidence.[203] Researchers who have examined jury deliberations have shown that factfinders also sometimes have difficulty distinguishing relevant evidence from irrelevant evidence and from evidence that may be relevant but should not be considered (for example, whether one of the parties has insurance in a slip-and-fall case).[204] And vast amounts of research suggest that people are not any better than chance at determining whether someone is telling the truth or lying, which suggests that jurors may have difficulty determining credible evidence from evidence that is not credible.[205]

The difficulty extends when applying the law as well. With respect to admissibility decisions, judges have difficulty applying half of the *Daubert* criteria,[206] and other research reveals that, largely because of the arcane language contained in them, instructions to the jury about the law are often misunderstood.[207] Compounding the problem, jurors sometimes apply facts to the laws as they understand them colloquially—that is, to their "common sense" understanding of what constitutes robbery or burglary—and not to the laws as they are defined by state and federal statutes.[208] Thus, not only is decisional accuracy theoretically difficult to achieve, empirical research suggests that it is *actually* difficult to achieve as well.

This research raises the question of how and why decisions from well-intentioned people—and sometimes *groups* of well-intentioned people—can become so flawed. In studying human judgment and decisionmaking, behavioral researchers have identified several psychological determinants of decisional accuracy, which can aid policymakers in designing legal sys-

202. *See* Joel Cooper, Elizabeth A. Bennett & Holly L. Sukel, *Complex Scientific Testimony: How Do Jurors Make Decisions?*, 20 L. & HUM. BEHAV. 379, 390–93 (1996) (concluding that the more complex the scientific testimony, the more likely jurors are to find it credible).

203. *Id.*

204. *See* Shari Seidman Diamond, Beth Murphy & Mary R. Rose, *The "Kettleful of Law" in Real Jury Deliberations: Successes, Failures, and Next Steps*, 106 NW. U. L. REV. 1537, 1585 (2012) (noting in experiments, jurors occasionally cited a piece of legally irrelevant information during deliberations).

205. *See* Bella M. DePaulo & Roger L. Pfeifer, *On-the-Job Experience and Skill at Detecting Deception*, 16 J. APPLIED PSYCHOL. 249, 261–62 (1986) (describing an experiment in which federal enforcement officers fared no better than chance at detecting lies).

206. *See* Sophia I. Gatowski et al., *Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-*Daubert *World*, 25 L. & HUM. BEHAV. 433, 452 (2001) (concluding that many judges have difficulty applying the *Daubert* criteria).

207. Diamond et al., *supra* note 204, at 1557–64.

208. *See* Vicki L. Smith, *When Prior Knowledge and Law Collide: Helping Jurors Use the Law*, 17 L. & HUM. BEHAV. 507, 508–09 (1993) (concluding that jurors' naïve preconceptions of the law influence their verdict decisions).

tems that maximize this important goal.[209] Social psychologists have hypothesized that processing information intended to persuade a listener consists of two independent systems: (1) system 1, which is sometimes referred to as the "peripheral route" to persuasion; and (2) system 2, which is referred to as the "central route" to persuasion.[210] Very different inputs control whether individuals engage in system 1 or system 2 processing, and each system provides very different behavioral and cognitive outputs.[211]

Psychologists posit that the human brain, like a high-tech computer, has limited capacity and attempts to streamline the flow of cognitive resources when possible.[212] Thus, system 1 processing requires few cognitive resources and consists of reasoning that embodies the use of quick, superficial, and undemanding mental shortcuts.[213] For example, when evaluating an advertising message, engaging in system 1 processing might lead an individual to put undue weight on the attractiveness of the speaker, based on an association between attractive people and positive attributes such as truthfulness.[214] Although these mental shortcuts assist us in avoiding cognitive overload, scores of research demonstrate that heuristic-based information processing can, under certain circumstances, lead to errors in judgment.[215]

In contrast, system 2 processing is effortful, thoughtful, and slower than system 1 processing, and allows individuals to engage in abstract and higher-order thinking.[216] There is a trade-off, however; system 2 processing is also cognitively taxing and requires considerably more effort to sustain.[217] Unlike with system 1 processing, features of the persuasive message, and not superficial features of the speaker, affect the decisions of the individual engaged in system 2 processing.[218]

---

209. *See infra* text accompanying notes 212–227.

210. *See* Richard E. Petty & John T. Cacioppo, *The Elaboration Likelihood Model of Persuasion*, 19 ADV. EXP. SOC. PSYCHOL. 123, 125 (1986) (describing the peripheral and central routes to persuasion).

211. Keith E. Stanovich & Richard F. West, *Individual Differences in Reasoning: Implications for the Rationality Debate?*, 23 BEHAV. BRAIN SCI. 645, 658–60 (2000) (discussing in depth the characteristics of system 1 and 2 processing).

212. *Id.* at 648.

213. *Id.* at 658.

214. Joel D. Lieberman, *Head over the Heart or Heart over the Head? Cognitive Experiential Self-Theory and Extralegal Heuristics in Juror Decision Making*, 32 J. APPLIED SOC. PSYCHOL. 2526, 2530 (2002).

215. *See* Daniel Kahneman, *A Perspective on Judgment and Choice: Mapping Bounded Rationality*, 58 AM. PSYCHOLOGIST 697, 698–99 (2003) (noting that heuristic-based processing can produce high rates of errors).

216. *Id.* at 698.

217. *Id.* at 698–99.

218. *Id.*

Because of the complex nature of trials involving scientific evidence, researchers agree that encouraging factfinders to engage in system 2 processing is necessary.[219] Behavioral researchers have identified two factors that determine whether an individual will engage in system 2 processing: the cognitive capacity of the individual and her motivation to engage in complex reasoning.[220]

Several factors influence the extent to which an individual is motivated to engage in system 2 processing. First, the individual's "need for cognition"—that is, her desire to enjoy complex thinking—must be heightened.[221] Second, the message must be made relevant to the individual, and the individual must feel a personal sense of responsibility for her judgment.[222]

Although an individual's cognitive capacity for a given task is correlated with intelligence and experience (and is therefore difficult to vary),[223] there are ways in which cognitive capacity can be increased.[224] Researchers have shown that this can be done by increasing the amount of time necessary to evaluate the message, by minimizing distractions, and by avoiding extreme affective states.[225]

Of particular interest to policymakers, researchers have demonstrated that people prefer decisionmakers who make accurate decisions.[226] For example, in the management context, researchers found that the overall organizational justice produced by a hospital—which includes as a component its ability to produce accurate decisions—was correlated with measures of employee satisfaction.[227] So in sum, to the extent that policymakers can design a decisionmaking system that emphasizes the components of decisional accuracy, they will not only maximize perceptions of accuracy but also participants' preferences for that system.

219. *See* Russell Korobkin, *The Problems with Heuristics for Law* 14–15 (UCLA School of Law Research Paper No. 04-1, 2004) (describing the benefits of using system 2 in trial settings).

220. *See* Kahneman, *supra* note 215, at 716–17 (describing factors that influence which system of processing is used).

221. *Id.* at 703.

222. *Id.* at 717.

223. *Id.* at 699.

224. HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT 56–58 (Thomas Gilovich, Dale Griffin & Daniel Kahneman eds., 2002).

225. *Id.* at 56.

226. *See* Thomas Li-Ping Tang & Linda J. Sarsfield-Baldwin, *Distributive and Procedural Justice as Related to Satisfaction and Commitment*, 61 S.A.M. ADV. MGMT. J. 25, 27 (1996) (demonstrating that procedural justice in a work environment positively correlates with satisfaction and trust of decisionmakers).

227. *Id.*

C. Procedural Legitimacy

The other discrete dimension by which litigants gauge the acceptability of a decisionmaking paradigm is the degree to which it is perceived as procedurally legitimate. According to law and economics scholars, people seek to maximize their self-interest and pursue opportunities that bring about the greatest possible material advantage.[228] If this always were true, we would expect that people prefer legal systems that provide them with the best economic outcomes.[229] Although research suggests that outcomes do matter with respect to people's procedural preferences,[230] the full story is more complex. In conferring legitimacy onto a legal decision, people are remarkably sensitive to whether the process for reaching that decision was fair.[231] This phenomenon, known as procedural justice, predicts "people's reactions to their experiences with legal authorities are strongly shaped by their subjective evaluations of the justice of the procedures used to resolve their case."[232] In short, independent of outcomes, the manner in which a legal dispute is decided can predict people's preferences for certain legal procedures, perceptions of the decisionmaker's legitimacy, and their willingness to abide by its decisions.

Researchers have identified several procedural factors that influence people's perceptions of the legitimacy of a decisionmaking body:[233] the decisionmaker's neutrality (that is, that the decision is based on rules and facts instead of the decisionmaker's intuition),[234] the degree of respect and dignity that the decisionmaker confers on the parties,[235] the amount of voice and control that the parties have over the legal dispute,[236] and the degree to which parties can trust the decisionmaker's motive to be fair.[237] These fac-

228. *See generally* LYNN STOUT, CULTIVATING CONSCIENCE: HOW GOOD LAWS MAKE GOOD PEOPLE 27–30 (2011) (describing the adoption of the notion that individuals seek to maximize self interest in legal disciplines); *see also* JOHN W. THIBAUT & HAROLD H. KELLEY, THE SOCIAL PSYCHOLOGY OF GROUPS (1959).

229. *See generally* E. ALLAN LIND & TOM R. TYLER, THE SOCIAL PSYCHOLOGY OF PROCEDURAL JUSTICE (2001).

230. *See supra* note 228 and accompanying text.

231. *See generally* Tom Tyler & David Markell, *The Public Regulation of Land-Use Decisions: Criteria for Evaluating Alternative Procedures*, 7 J. EMPIRICAL LEGAL STUD., 538, 569–70 (2010) (suggesting "people are more willing to accept decisions made through procedures they judge to be fair").

232. *Id.* at 541.

233. Tom R. Tyler, *Social Justice: Outcome and Procedure*, 35 INT'L J. PSYCHOL. 117, 121 (2000).

234. *Id.* at 122.

235. *Id.*

236. *Id.* at 121–22.

237. *Id.* at 122.

tors manifest themselves in the laboratory and outside the laboratory[238] and in both criminal and civil disputes.[239]

Procedural justice is a robust phenomenon and its implications are far-reaching. In legal adjudication, perceptions of fair process can confer legitimacy on legal actors including judges[240] and juries.[241] It can also affect perceptions of legitimacy in alternative dispute resolution—including mediation and arbitration—and also the legitimacy of the decisionmakers in those paradigms.[242]

Not only do perceptions of fair treatment influence people's preferences in the courtroom, they influence people's preferences in the legal system outside the courtroom and in non-legal contexts.[243] For example, affording those who have been stopped by the police an explanation for their detainment and a chance to explain themselves to a law enforcement officer increases people's perceptions of law enforcement's legitimacy.[244] Moreover, perceptions of procedural fairness can increase perceptions of legitimacy (and a willingness to abide by decisions) in non-legal relationships that involve power dynamics, including superior-subordinate relationships in the workplace[245] and in the family.[246]

Two competing theories seek to explain why perceptions of fair process influence a decisionmaker's perceived legitimacy. The first theory, proposed by John Thibaut and Laurens Walker, is instrumentalist in nature.[247] According to Thibaut and Walker, people desire control over deci-

238. Rebecca Hollander-Blumoff, *The Psychology of Procedural Justice in the Federal Courts*, 63 HASTINGS L.J. 127, 132–34 (2011).

239. *See* E. ALLAN LIND, ARBITRATING HIGH-STAKES CASES: AN EVALUATION OF COURT-ANNEXED ARBITRATION IN A UNITED STATES DISTRICT COURT 61–64 (1990) (describing the characteristics of arbitration programs in North Carolina).

240. *See* TOM R. TYLER, WHY PEOPLE OBEY THE LAW: PROCEDURAL JUSTICE, LEGITIMACY, AND COMPLIANCE 4 (2006) (noting that voluntary compliance is far preferred by legal authorities such as judges and police officers).

241. Robert J. MacCoun & Tom R. Tyler, *The Basis of Citizens' Perceptions of the Criminal Jury: Procedural Fairness, Accuracy, and Efficiency*, 12 L. & HUM. BEHAV. 333, 350 (1988).

242. *See* Rebecca Hollander-Blumoff & Tom R. Tyler, *Procedural Justice in Negotiation: Procedural Fairness, Outcome Acceptance, and Integrative Potential*, 33 L. & SOC. INQUIRY 473, 492 (2008) (finding that enhanced procedural justice encourages the acceptance of all types of negotiated agreements).

243. Hollander-Blumoff, *supra* note 238, at 133.

244. Tom R. Tyler & Robert Folger, *Distributional and Procedural Aspects of Satisfaction with Citizen-Police Encounters*, 1 BASIC & APPLIED SOC. PSYCHOL. 281, 288–92 (1980).

245. Tom R. Tyler, *Promoting Employee Policy Adherence and Rule Following in Work Settings: The Value of Self-Regulatory Approaches*, 70 BROOK. L. REV. 1287, 1306 (2005) (finding that perceptions of procedural fairness in the workplace instill a sense of authoritative legitimacy, encouraging workers to follow company rules).

246. Shelly Jackson & Mark Fondacaro, *Procedural Justice in Resolving Family Conflict: Implications for Youth Violence Prevention*, 21 L. & POL'Y 101, 106 (1999).

247. *See* THIBAUT & WALKER, *supra* note 173, at 117–24 (describing the theory).

sionmaking processes because process control leads to decision control.[248] As Tom Tyler explains the theory, people who give decision control to a third party will still attempt to maintain as much control over the decision as possible.[249] Thus, parties' focus on the fairness of process—for example, the ability to control the flow of evidence received by the decisionmaker—is actually an attenuated focus on outcome control.[250] Consequently, people will view fair process as instrumental to receiving desirable outcomes.[251]

A competing view asserts that control over the process affords litigants dignitary benefits independent of favorable outcomes.[252] This "value-expressive" (or "group value") model of procedural justice asserts that, by allowing litigants an opportunity to present their side of the dispute to the decisionmaker,[253] by affording them respect as they do so,[254] and by doing so in an unbiased manner,[255] litigants will feel valued and respected by the decisionmaker as members of society.[256] Research has demonstrated that people still value the ability to explain their case to a decisionmaker even when their ability to do so explicitly will have no effect on the outcome[257] which supports the group value model of procedural justice.[258]

IV. REDESIGNING THE SCIENCE COURT

Proposals for redesigning the science court are long on theory but short on empirical support. An empirically-based science court is more likely to receive greater public support, which in turn may affect its lon-

248. *Id.*

249. Tom R. Tyler, *The Psychology of Procedural Justice: A Test of the Group-Value Model*, 57 J. PERS. & SOC. PSYCHOL. 830, 830–31 (1987).

250. *Id.*

251. *Id.*

252. *Id.*

253. *See* Robert Folger, *Distributive and Procedural Justice: Combined Impact of "Voice" and Improvement on Experienced Inequity*, 35 J. PERS. & SOC. PSYCHOL. 108, 108–19 (1977) (discussing the importance of voice in ensuring justice).

254. Tyler & Markell, *supra* note 231, at 547–48.

255. *See* Folger, *supra* note 253, at 109 (explaining that "[h]aving a voice in the system . . . is often suggested as a critical mediator of satisfaction" in particular settings).

256. *See* Tom R. Tyler & E. Allen Lind, *A Relational Model of Authority in Groups*, 25 ADV. EXP. SOC. PSYCHOL. 115, 153–55 (1992) (noting that respect is frequently considered to be an indicator of fairness).

257. Tom R. Tyler et al., *Influence of Voice on Satisfaction with Leaders: Exploring the Meaning of Process Control*, 48 J. PERS. & SOC. PSYCHOL. 72, 79 (1985); *see also* E. Allan Lind, Robin I. Lissak & Donald E. Conlon, *Decision Control and Process Control Effects on Procedural Fairness Judgments*, 4 J. APPLIED SOC. PSYCHOL. 338, 346–48 (1983) (finding that subjects of an experiment perceived procedures in which they had high control more fair than those in which they had less control).

258. For a nonempirical perspective on procedural legitimacy, see generally Lawrence B. Solum, *Procedural Justice*, 78 S. CAL. L. REV. 181 (2004).

gevity as a serious proposal to improve the manner in which scientific disputes are adjudicated.

This Part provides empirical support for the model introduced in Part III. This Part will demonstrate that decisional accuracy and procedural legitimacy are differentially perceived within decisionmaking systems and across decisionmaking systems.

A. The Experiments

Until now, the debate surrounding the redesign of the science court—and the debate over how to facilitate the accurate apprehension of scientific evidence in traditional trial by jury—has focused on empirically untested theories of human cognition and human behavior.[259] Few legal scholars have attempted to apply Thibaut and Walker's research on procedural justice to this debate, and even fewer have constructed their own experiments to collect data that might inform how these decisionmaking paradigms should be established. This Article is the first to do so in a series of four experiments.

The first experiment seeks to demonstrate what past psychological research has merely suggested: that different methods of resolving legal disputes involve differing perceptions of those methods' accuracy and fairness.[260] This, in turn, lends support to the idea that we should think about the design of these decisionmaking paradigms in terms of two orthogonal dimensions: decisional accuracy and procedural legitimacy. The first experiment also tests whether the disparity between perceptions of accuracy and legitimacy persists regardless of whether the dispute is civil or criminal in nature.

The second experiment builds on the first by examining whether different systems of deciding legal disputes are perceived as differentially accurate and differentially legitimate.[261] If different procedural paradigms are perceived as differentially accurate and differentially fair, this suggests that the decision to enact different decisionmaking paradigms is actually a policy choice between competing—and not entirely complementary—psychological values.

The third and fourth experiments, which are presented in Part V below, examine whether a hybrid decisionmaking paradigm—that is, one that incorporates elements of both the traditional trial by jury and the inquisitorial science court of old—is preferred by litigants and, if so, whether that

259. *See supra* Part III.

260. *See infra* Part IV.B.

261. *See infra* Part IV.C.

preference is a function of their perceptions of the hybrid system's accuracy and legitimacy.[262] I now turn to these experiments.

B. Study 1

The first study examines how litigants perceive the accuracy and procedural legitimacy of two decisionmaking systems: the American adversarial system and the inquisitorial system favored by many foreign nations. Section 1 examines these perceptions in the context of a civil dispute, whereas Section 2 examines these perceptions in a criminal dispute. The methods and results are reported below.

1. Civil Actions

One hundred and forty-two participants were recruited via the Internet marketplace website "Amazon Mechanical Turk" ("AMT").[263] Each participant completed an online survey in return for nominal payment. Participants were restricted to those over eighteen years of age and who currently reside in the United States. The sample was 58.9% female and averaged 37.61 years of age. Participants ranged in age from nineteen to sixty-six, and all participants were American citizens. All participants completed the survey within ten to fifteen minutes.

In the study, all participants were asked to imagine themselves as a member of the public (and thus a potential litigant), who was evaluating different types of legal procedures. Participants read about a legal dispute in which a plaintiff consumed the defendant corporation's blood pressure drug and became violently ill with severe stomach bleeding. The plaintiff then sued the defendant to recover for her healthcare costs, lost earnings, and pain and suffering.

The legal dispute always involved the testimony of an expert scientific witness who attempted to link the plaintiff's injury to the defendant's drug. The disputes differed, however, with respect to the legal procedure that the court used to resolve the case. Half of the participants were exposed to an adversarial framework, in which both parties had the opportunity to present (and control) the evidence that the court received. Specifically, these participants were told—consistent with the current practice in civil disputes in state and federal court[264]—that each party could select on its own, and pay for, an expert witness to explain its side of the case. The participants were

262. *See infra* Part V.

263. AMAZON MECHANICAL TURK, https://www.mturk.com/mturk/ (last visited Feb. 25, 2014).

264. *See, e.g.*, FED. R. CIV. P. 26(a)(2) (describing the disclosure requirements for expert witnesses in federal civil disputes).

also told that each party may interview as many expert witnesses as they desire and—consistent with civil practice[265]—that they need not inform the adversary party (or the court) of the persons they interviewed but ultimately chose not to hire as an expert witness. Participants were also informed that each party had the right to cross-examine the adversary party's expert.

The remaining participants were exposed to an inquisitorial framework, which is the norm in many foreign countries and was the model for one of the earlier-proposed science courts.[266] Under this framework, participants were told that the court would appoint an expert—with no input from either of the parties—to testify to the scientific issues involved in the case. These participants were also told that neither party would pay for the expert and that the expert would work independently of both parties. In addition, participants were told that neither party could cross-examine the court-appointed witness.

To ensure participants were paying attention to the study, and to ensure that the experimental manipulation was successful, participants answered a series of multiple-choice questions about the case and the legal rules by which the case would be decided. Participants could not advance in the experiment until they answered all questions correctly.[267] All participants completed the study and answered these attention, memory, and manipulation checks correctly.

All participants then answered several questions designed to quantify their impressions of two psychological dimensions: the decisionmaker's accuracy and the decisionmaker's legitimacy. Specifically, participants answered, on 7-point scales (ranging from, unless otherwise specified, "very little" to "very much"), the following questions:[268]

265. *Id.*

266. *See supra* Part III.

267. If participants answered the questions incorrectly, they received an error message prompting them to reread the vignette and to answer the questions again.

268. A 7-point Likert scale is a psychometric scale commonly used in questionnaires to capture data from ordinal or continuous variables. *See* ROBERT M. LAWLESS, JENNIFER K. ROBBENNOLT & THOMAS S. ULEN, EMPIRICAL METHODS IN LAW 172 (2010). Likert scales are used frequently to collect empirical data, although scholars have noted the limitations of this method. *See, e.g.*, Gerald Albaum, *The Likert Scale Revisited: An Alternate Version*, 39 J. MKT. RES. SOC'Y 331, 341 (1997) (explaining that "Likert scales as generally used tend to underestimate the extreme positions held by people, and that a *central tendency* forms-related error exists").

Accuracy Items	
"Accuracy"	How likely is it that a decision reached using this procedure will be accurate?
"True"	How likely is it under this procedure that a court will uncover the true facts?
"Right Information"	How likely is it that this procedure will reveal the right information that the court needs to make a decision?
"Factual Decision"	How much confidence would you have in the court to make a good factual decision?
"Correct"	How much faith do you have in a court using this procedure to resolve disputes correctly?

Legitimacy Items	
"Gives Control"	How much control does this procedure give people over the outcome?
"Presents Arguments"	How much does this procedure afford people an adequate opportunity to present arguments to the decisionmaker?
"Gives Voice"	How much does this procedure give people an adequate opportunity to make their points?
"Protects Rights"	How much does this procedure adequately protects peoples' rights when they bring forth a legal dispute?
"Provides Dignity"	To what extent does this procedure treat people with dignity and respect?
"Takes Disputes Seriously"	To what extent does this procedure allow the court to take seriously peoples' legal disputes?

Participants then answered several demographic questions, listing their gender, age, income, highest level of education completed, race, political orientation, national origin, and the degree to which they took the study seriously. Participants were also asked several questions designed to measure their prior experience with the law, including how often they had been to court, whether they had ever been involved in a civil or criminal proceeding

(as either a juror, a witness, or a litigant), and whether they had a job in which they interact with legal actors. They were also asked for their general impressions of (and feelings toward) the law. Participants were then debriefed about the aims of the study and were dismissed.

a. Results and Discussion

The results and discussion of this study proceed in two parts.[269] First, I discuss the results of preliminary analyses, which examined (1) whether the questions posed to participants correctly measure two distinct psychological dimensions: accuracy and legitimacy; and (2) whether the participants' demographics affected the results. Second, I discuss the main results, which examine whether adversarial and inquisitorial decisionmaking systems are perceived as being equally accurate and fair, or whether accuracy and fairness are perceived differently.

i. Preliminary Analysis

To measure whether the questions participants were asked represent two separate psychological constructs (which I label "accuracy" and legitimacy"), I employed a technique called a "factor analysis."[270] The factor analysis revealed that responses to the questions fell on two separate dimensions, which together explained the vast majority of the variability in participants' responses.[271] On the first dimension, labeled "Accuracy," I placed the questions labeled "Correct," "Accurate," "True," "Right Information,"

269. In each of these experiments, data was analyzed using (1) either a one-way or a two-way analysis of variance ("ANOVA"), which provides a statistical test of whether the means of several groups are equal, and (2) Tukey's Honestly Significant Difference (HSD) Test, which examines which of those means differs from the other. The ANOVA results are represented by an F-statistic, and the sizes of the effects are represented by η^2_p. Means are denoted by the letter "M" and standard deviations are denoted by the letters "SD." *See generally* LAWLESS ET AL., *supra* note 268, at 55–335 (explaining empirical research methodologies and statistical techniques). Differences are denoted as "statistically significant" in this Article if the statistical tests indicate that the likelihood that the difference observed would occur by chance is 5% or less (as indicated by the p-value as $p < 0.05$). A difference is "marginally significant" if the likelihood of seeing such a difference by chance is greater than 5% but less than 10%. *See* Jennifer K. Robbennolt, *Apologies and Legal Settlement: An Empirical Examination*, 102 MICH. L. REV. 460, 485 n.117 (2003) (citing BARBARA G. TABACHNICK & LINDA S. FIDELL, USING MULTIVARIATE STATISTICS (2d ed. 1989)). Planned comparisons were accompanied by the Tukey HSD Test to stabilize the "familywise error rate" and avoid false positives. *See, e.g.*, James Jaccard, Michael A. Becker & Gregory Wood, *Pairwise Multiple Comparison Procedures: A Review*, 96 PSYCHOL. BULL. 589 (1984) (discussing several techniques, including the Tukey technique, for controlling Type I error when making multiple comparisons among groups).

270. *See How to Reduce Number of Variables and Detect Relationships, Principal Components and Factor Analysis*, STATSOFT, www.statsoft.com/Textbook/Principal-Components-Factor-Analysis (last visited Feb. 25, 2014) (explaining factor analytic techniques).

271. These factors explained 82.47% of the variance in participants' responses.

and "Factual Decision." The questions labeled "Protects Rights," "Takes Disputes Seriously," "Gives Voice," "Presents Arguments," "Gives Control," and "Provides Dignity" loaded onto the other dimension, which I labeled "Legitimacy." Participants' responses to all of the "Accuracy" items were highly correlated, and so—consistent with standard empirical practices—I averaged them into one "Accuracy" measure.[272] Similarly, participants' responses to all of the "Legitimacy" items were highly correlated, thus I averaged them into one measure of "Legitimacy."[273]

Measurements of participants' perceptions of accuracy and legitimacy were then examined with several demographic variables included in the model as predictors. As expected, none of these demographic variables—or their interaction with other predictor variables—was a statistically significant predictor of participants' perceptions of accuracy and legitimacy.[274] As such, I report the main results without reference to demographic factors.

ii. Main Analysis

I predicted that potential litigants perceive decisional accuracy and procedural legitimacy differently, yet it would be surprising to find that these two concepts were unrelated. To test this hypothesis, I examined the bivariate correlation between the legitimacy measure and the accuracy measure across all participants.[275] As expected, the two concepts are moderately correlated.[276] Finding a moderate correlation, of course, is different from concluding that litigants perceive these concepts to be equivalent. I now turn to that question.

To test the hypothesis that, with respect to civil disputes, litigants would perceive the adversarial procedure as more legitimate than it is accurate (and vice versa for litigants exposed to an inquisitorial procedure), I conducted a 2 (ratings: accuracy vs. legitimacy) x 2 (procedure: adversarial vs. inquisitorial) analysis of variance ("ANOVA")[277] on the ratings given by

272. The correlation between multiple items is calculated through a "Cronbach's alpha" statistic. Cronbach's alpha values close to 1.0 are considered strongly correlated. The Cronbach's alpha value for the six accuracy items is .96.

273. Cronbach's alpha is .84.

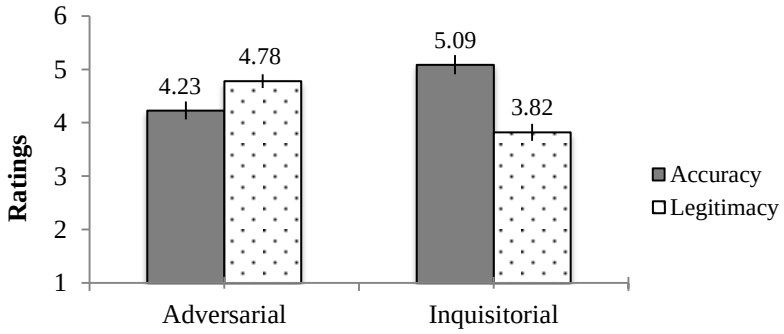
274. All F-values < 1.00; all p-values > .05.

275. A bivariate correlation represents the degree to which two items relate to each other. The correlation is represented by the "Pearson's r" statistic and ranges from -1 to +1. Correlations close to +1 and to -1 are stronger whereas correlations close to 0 are weaker. Positive correlations indicate that an increase in one item is accompanied by an increase in the second item (for example, weight and height). Negative correlations indicate that an increase in one item is accompanied by a decrease in the second item.

276. Pearson's $r(140) = .52$, $p < .001$.

277. A 2x2 design means that one experimental variable—here, participants' perceptions—contains two different versions (accuracy and legitimacy), while the other—the procedure to which participants were exposed—also contains two different versions (adversarial and inquisito-

the potential litigants. The results, displayed in the figure below, revealed that participants' ratings of accuracy and fairness were statistically different from each other, and that the nature of the difference depended on the decisionmaking procedure that the litigants experienced.[278]



As seen in the left-handed side of the figure above, when participants were exposed to an adversarial procedure, they rated the procedure as significantly less accurate than it was legitimate.[279] This is consistent with the hypothesis that when litigants are afforded a high degree of control over the evidence in the adversarial system, they perceive that system as providing dignity and voice, which are components of procedural legitimacy. This control over the evidence appears to be a double-edged sword. Litigants do not perceive the adversarial system to be as accurate as it is fair, perhaps because the adversarial system allows for the biased assimilation of evidence from biased attorneys to the neutral factfinder.

rial). This design was both "between subjects"—which means that different participants were exposed to just one procedure—and "within subjects"—which means that multiple data from the same subjects were collected (here, their ratings of accuracy and fairness). An ANOVA provides a statistical test of whether the means of several groups are equal. *See* LAWLESS ET AL., *supra* note 268.

278. There was a statistically significant interaction between the procedure to which participants were exposed and their perceptions of accuracy and legitimacy. $F(1, 140) = 98.28$, $p < .001$, $n^2_p = .41$.

279. *M-accuracy* = 4.23 (*SD* = 1.49), *M-legitimacy* = 4.77 (*SD* = 1.13). $F(1, 72) = 21.22$, $p < .001$, $n^2_p = .23$.

A very different picture emerges when litigants are exposed to an inquisitorial decisionmaking paradigm. As seen in the right-hand side of the figure, these participants perceived the inquisitorial system as significantly less legitimate than it was accurate.[280] Again, consistent with my hypothesis, by vesting in the neutral factfinder the power to collect evidence—including scientific expertise—the inquisitorial paradigm appears less susceptible to the perception that the decisionmaking tribunal is evaluating faulty, biased evidence. But this perception comes at a cost; by losing their "voice"—their ability to communicate with the factfinder by presenting the evidence that the factfinder should consider—litigants perceive the process as significantly less fair.

In sum, this study suggests that there are important tradeoffs that occur in litigants' perceptions of accuracy and legitimacy as a function of the type of tribunal that decides the case. Litigants perceive the adversarial system as favoring legitimacy while sacrificing accuracy, whereas they perceive the inquisitorial system as favoring accuracy at the cost of perceived legitimacy.

We might wonder if this is true across both civil and criminal actions. Perhaps perceptions of accuracy and legitimacy are particularly heightened when liberty, rather than money, is at stake. Even so, if the differences observed in civil trials regarding accuracy and legitimacy are true differences, criminal trials should, if anything, exacerbate those differences. Thus, I hypothesize that these perceptions are robust, and that we should observe the same pattern of results in criminal settings. The next study tests this hypothesis.

2. Criminal Actions

Fifty-five participants, who had not participated in the previous study, were recruited via the internet marketplace AMT to participate in an online study for nominal payment. The sample was 41.80% female, 70.40% Caucasian, and averaged 32.24 years of age. Participants ranged from nineteen to sixty years of age. The study took participants between ten to fifteen minutes to complete.

In this study, participants were asked to picture themselves as members of the public (and thus potential litigants) evaluating legal procedures in a criminal trial. The criminal trial was based on a Pennsylvania statute involving injuries from a dog bite. Under Pennsylvania law, a person whose dog causes "severe injury" to another person is guilty of a misde-

280. *M-accuracy* = 5.09 (*SD* = 1.49), *M-legitimacy* = 3.82 (*SD* = 1.30). $F(1, 68) = 82.21$, $p < .001$, $n^2_p = .55$.

meanor punishable by up to five years in prison.[281] Participants read about a case in which expert scientific testimony was elicited to determine whether "severe injury" had occurred to the victim who was bitten by the defendant's dog.

As in the previous study, all participants read the same case, but they were exposed to different rules regarding how the case would be decided. Half of the participants learned that the dispute would be resolved through adversarial means, and that the parties would interview, select, and present their own expert witnesses at their own expense. The other participants learned that the dispute would be resolved inquisitorially, such that the court would pay for and provide the expert testimony in the case.

Then, all participants answered the same questions posed in the civil trial study, which were designed to quantify their perceptions of the accuracy and legitimacy of the legal proceedings.[282] Participants then responded to demographic questions, were debriefed about the study's aims, and were dismissed.

a. Results and Discussion

The results are discussed in two parts. First, I discuss the results of a preliminary analysis regarding the validity of the study measures and whether demographic factors affected the study results. Second, I examine the relationship between litigants' perceptions of accuracy, their perceptions of legitimacy, and the type of procedure in a criminal trial.

i. Preliminary Analysis

As in Study 1, I employed factor analysis to determine whether the questions posed to participants measured decisional accuracy and procedural legitimacy as distinct concepts. The factor analysis revealed that participants' answers to these questions fell onto two distinct dimensions, accuracy and legitimacy, which together explained most of the variability in their responses.[283] The items that loaded onto the accuracy dimension were highly correlated, so I averaged them together into one "accuracy" measure.[284] The items that loaded onto the legitimacy dimension were also highly correlated, and thus were averaged into one "legitimacy" measure.[285] As in Study 1, none of the demographic information provided by participants sys-

281. 3 PA. STAT. ANN. § 459-505-A(c) (West 2008). *See also* Commonwealth v. Hake, 738 A.2d 46, 47 (Pa. Commw. Ct. 1999) (considering whether to hold an owner of a dog criminally liable under the Pennsylvania statute when the dog attacked a human being unprovoked).

282. *See supra* Part IV.B.1.

283. These factors explained 84.00% of the variance in participants' responses.

284. Cronbach's alpha value is .95.

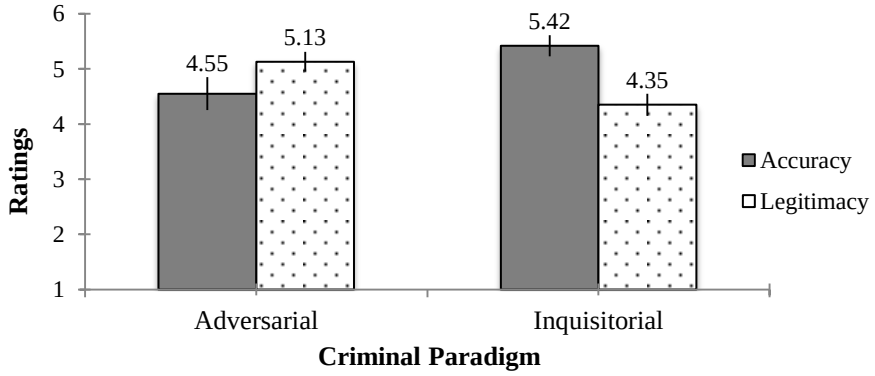
285. Cronbach's alpha value is .79.

tematically predicted their perceptions of accuracy and legitimacy.[286] As such, the remainder of the analysis does not discuss these demographic variables.

ii. Main Analysis

I again tested whether perceptions of accuracy and perceptions of legitimacy were correlated. As expected, the results revealed a moderate correlation between these concepts.[287] I next tested whether the adversarial system produces different perceptions of accuracy and legitimacy in criminal disputes, and whether the inquisitorial system does as well. I now turn to that analysis.

To test the hypothesis that, in criminal trials, litigants perceive the adversarial system as more legitimate than it is accurate—and vice-versa in the inquisitorial system—I performed a 2 (ratings: accuracy vs. legitimacy) x 2 (procedure: adversarial vs. inquisitorial) ANOVA on the ratings given by potential litigants. As in the first study, perceptions of accuracy and legitimacy, illustrated in the figure below, differed significantly as a function of the type of system to which participants were exposed.[288]



As seen in the left-hand side of the figure above, litigants exposed to an adversarial procedure perceived the procedure as significantly less accurate than it was legitimate.[289] The mirror image of these results is shown on the right-hand side of the figure, which graphs litigants' perceptions of ac-

286. All *F*-values < 1.00; all *p*-values > .05.

287. Pearson's $r(53) = .46$, $p < .001$.

288. There was a statistically significant interaction between the ratings that participants gave and the procedure to which they were exposed. $F(1, 53) = 37.43$, $p < .001$, $n^2_p = .41$.

289. *M-accuracy* = 4.55 (*SD* = 1.57), *M-legitimacy* = 5.13 (*SD* = 0.92). $F(1, 26) = 8.77$, $p = .006$, $n^2_p = .25$.

curacy and legitimacy with respect to the inquisitorial decisionmaking system. Here, litigants perceived the system as significantly less legitimate than it was accurate.[290] Thus, as predicted, litigants' perception of the accuracy and legitimacy of these systems was robust across civil and criminal proceedings. Across different types of cases, it appears that adversarial and inquisitorial systems favor the perceptions of different values.[291]

C. Study 2

The first study suggests that litigants' perceptions of a lawmaking body's decisional accuracy and procedural legitimacy can differ, and that the nature of those differences depends on the structural features of the decisionmaking body. Study 2 examines whether participants view different legal systems—here, the adversarial and inquisitorial paradigms—as differentially accurate and differentially legitimate. The methods and results are reported below.[292]

1. Methods and Procedure

Two hundred and forty-one participants, who had not participated in the previous studies, were recruited via AMT for nominal payment. As in the prior studies, the sample was diverse with respect to age, gender, race, and other demographic variables.[293] Participants gave their informed consent and read the study instructions.

The procedure in this study was identical to the procedure in the civil trial version of Study 1.[294] Participants read about a lawsuit in which the plaintiff sued the defendant corporation for damages related to a stomach illness, allegedly caused by the defendant's blood pressure medication. Half of the participants were exposed to an adversarial paradigm for resolving the legal dispute—where each party controls the expert testimony that is presented to the court—while the others were exposed to an inquisitorial

290. *M-accuracy* = 5.42 (*SD* = 1.01), *M-legitimacy* = 4.35 (*SD* = 1.04). $F(1, 27) = 33.21$, $p < .001$, $n^2_p = .55$.

291. This is confirmed by additional statistical analysis. An analysis of the civil and criminal data together in a three-way design—specifically, a 2 (case type: civil vs. criminal) x 2 (procedure: adversarial vs. inquisitorial) x 2 (ratings: accuracy vs. fairness) design—revealed no significant three-way interaction, which confirms that the additional variable—case type—had no effect on the results. $F(1, 193) = 0.24$, $p = .625$, $n^2_p = .00$.

292. The data from Study 1 could have been reanalyzed to determine if these paradigms are also perceived as differentially accurate and procedurally legitimate. To permit the replication of the results found in Study 1, I ran Study 2 with a separate sample of participants.

293. The sample was 54.40% female, averaged 37.15 years of age (with a range between 18 and 70), and was 76.70% Caucasian.

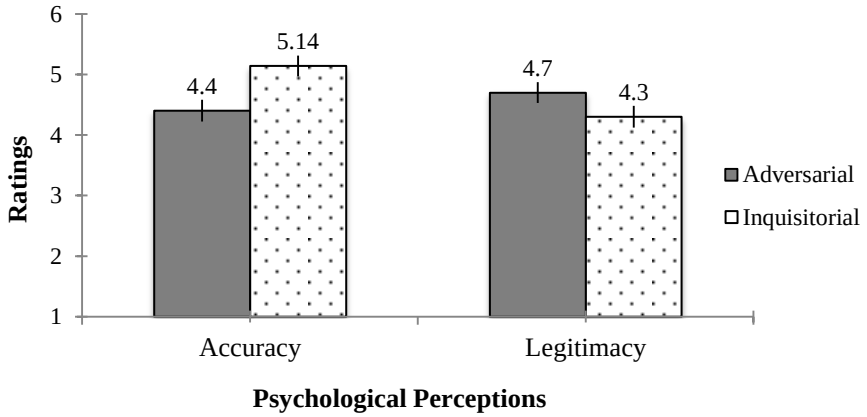
294. *See supra* Part IV.B.1.

paradigm for resolving the dispute, in which the court appointed an expert witness to testify to the scientific issues in the case.

Again, participants answered a series of items designed to quantify their perceptions of the accuracy and legitimacy of each decisionmaking paradigm. Factor analysis revealed that the eleven items (1) loaded onto distinct "accuracy" and "legitimacy" dimensions; (2) accounted for the vast majority of the variability in participants' responses;[295] and (3) were each averaged to form two distinct perceptual measures.[296] Participants also answered demographic questions, which later analyses confirmed did not affect their perceptions of accuracy and legitimacy.[297] Participants took ten to fifteen minutes to complete the survey, and were debriefed and dismissed.

2. Results and Discussion

Perceptions of accuracy moderately correlated with perceptions of legitimacy.[298] To determine whether the adversarial system or the inquisitorial system is perceived as more accurate than the other—and whether the adversarial or the inquisitorial system is perceived as more legitimate then the other—I conducted a 2 (ratings: accuracy vs. legitimacy) x 2 (procedure: adversarial vs. inquisitorial) ANOVA on participants' perceptions of accuracy and legitimacy. This figure illustrates that the adversarial system and the inquisitorial system were perceived differently with respect to both accuracy and legitimacy.[299]



295. These dimensions together accounted for 77.31% of the variability.

296. Cronbach's alpha value for the accuracy dimension is .96; Cronbach's alpha value for the legitimacy dimension is .89.

297. All F-values < 1.00; all p-values > .05.

298. Pearson's $r(239) = .63$, $p < .001$.

299. There was a statistically significant interaction between the procedure to which participants were exposed and their ratings of accuracy and fairness. $F(1, 239) = 72.02$, $p < .001$, $n^2_p = .23$.

Specifically, as illustrated in the figure above, the adversarial system was perceived as producing significantly less accurate verdicts compared to the inquisitorial system.[300] This is consistent with the hypothesis that, because the inquisitorial system vests control of the evidence in neutral third parties, the evidence can be trusted more by the litigants and by the court. In contrast, the production of evidence by biased advocates in the adversarial paradigm apparently causes litigants to perceive that that the American adversarial paradigm leads to comparatively faultier decisions. Moreover, the ability of lawyers to cross-examine the "biased" evidence produced by the adversary party does not ameliorate this perception.

The data is different with respect to perceptions of legitimacy, as illustrated in the right-hand side of the figure. Although it was perceived as less accurate than the inquisitorial system, the adversarial system was perceived as significantly more legitimate.[301] If we consider legitimacy to be a function of the level of voice, respect, and opportunity to present evidence afforded to litigants,[302] then this result is consistent with the existing empirical literature. The inquisitorial system, in an effort to neutralize potential biases with respect to the quality of evidence presented, minimizes the control that the parties have over the evidence. Thus, the takeaway from this experiment, discussed in more detail in Parts V and VI, is that the choice to design a decisionmaking paradigm in an adversarial vein or in an inquisitorial vein is actually a choice between the perception of two *competing*—and not altogether complementary—values.

V. A MODEST PROPOSAL: THE NEW SCIENCE COURT

These studies give us important information for how to design a science court that will enjoy the greatest degree of public acceptance. The studies tell us that psychological concepts such as decisional accuracy and procedural legitimacy are not inexorably intertwined.[303] And as we move along the continuum from an adversarial legal proceeding to an inquisitorial proceeding, litigants' perceptions of decisional accuracy and procedural legitimacy shift dramatically.[304] Procedures that are more adversarial in nature—that is, those that include trials by jury, cross-examination of witnesses, and greater control over the flow of information to the factfinder—are

300. *M-adversarial* = 4.40 (*SD* = 1.41), *M-inquisitorial* = 5.14 (*SD* = 1.32). $F(1, 239) = 33.05$, $p < .001$, $n^2_p = .07$.

301. *M-adversarial* = 4.70 (*SD* = 1.34), *M-inquisitorial* = 4.30 (*SD* = 1.38). $F(1, 239) = 5.27$, $p = .022$, $n^2_p = .02$.

302. *See supra* Part III.C.

303. *See supra* Part IV.B.

304. *See supra* Part IV.C.

considered more procedurally legitimate than they are accurate.[305] Procedures that are more inquisitorial in nature, however—that include features such as bench trials, court-appointed expert witnesses, and a reduced role for the attorney-advocate (and an increased role for the factfinder)—are considered more accurate than they are procedurally legitimate.[306]

With these important factors in mind, I propose a redesigned science court to adjudicate complex scientific disputes. If designing a science court entirely in the adversarial mode will lead to increased perceptions of procedural legitimacy but decreased perceptions of decisional accuracy, and if designing the court in the inquisitorial mode will cause litigants to perceive the science court as producing more accurate decisions but by less procedurally valid means, then including facets of both of these decisionmaking paradigms may prioritize both of these important psychological concepts.

To that end, the redesigned science court has the following components. First, the science court must be composed of science-savvy jurists (and law clerks) who are educated consumers of the scientific method. Second, the expert witnesses who testify at trial should be appointed by the court, and they should work independently of the parties to the litigation. Ideally, judges would choose these experts from a state or federal pool of scientists who are independently qualified to serve as expert witnesses in the science court. Third, each party to the litigation must be allowed to vigorously cross-examine the court-appointed expert after she has given her report to the court. Finally, the science court should include the jury as the factfinder.

These recommendations should maximize the public's perceptions of the science court's decisional accuracy and procedural legitimacy, which in turn should increase its public support. Procedural legitimacy should be enhanced by the adversarial features of the proposed science court: trials by jury and vigorous cross-examination. By incorporating these facets of the adversarial system into the proposed court, litigants should perceive that their voice is being heard by the factfinder, which will increase their perceptions of the dignity the factfinder affords them. The decisional accuracy of the proposed court should be enhanced by requiring the court to appoint the expert witness and by requiring that the judge have sufficient familiarity with, and understanding of, the scientific method. Requiring the court-appointed expert to work independently of the parties should reduce public perception that expert witnesses are "hired guns" who are biased to shape their testimony to favor the party that has hired them. Requiring judges to have a sufficient understanding of the scientific method should assuage the concerns of commentators that judges do not understand scientific evi-

305. *See supra* Part IV.C.

306. *See supra* Part IV.C.

dence, and may increase the likelihood that science court jurors have sufficient guidance from the court when reaching their verdicts.

The claims I raise here are not just theoretical; they are also empirical. Before implementing the proposed science court, it is possible to test whether it does, in fact, enjoy the greatest degree of public support, lead litigants to perceive it as highly accurate, and lead litigants to perceive it as procedurally legitimate. The remaining studies aim to provide that support.[307]

A. Study 3: Preference for the New Science Court

I developed an empirical study in order to determine whether the science court proposed in this Article is the preferred method for adjudicating matters involving sophisticated scientific evidence. In this section, I will describe the design and results of the study.

1. Methods and Procedure

A diverse sample of two hundred and eighty men and women participated in an online survey for nominal payment via AMT. Participants gave their informed consent and were provided with instructions for the online study.

As in the previous studies reported in this Article, participants read about a civil trial in which the plaintiff sued the defendant corporation over injuries stemming from the corporation's blood pressure medication. The plaintiff's case always included an expert scientific witness, who testified to facts purporting to link the defendant's medication to the plaintiff's injuries. Participants were not told of the jury's verdict.

This time, however, the decisionmaking process was varied in accordance with past proposals for the science court and with the research findings reported earlier in this Article. Participants read one of four different procedures for resolving the civil dispute. Some participants read about the decisionmaking procedure for which I advocate in this article: the court chooses an expert from a pool of qualified experts to testify to the scientific issues in the case, and the parties also have the right to vigorously cross examine the expert. The perceptions of participants in this condition were compared to the perceptions of participants in three other experimental conditions: (1) a "pure" adversarial paradigm, which is the current model for ordinary civil litigation in the United States; (2) a modified version of the adversarial model, in which the court establishes a pool of experts from which each party may select one to testify on their behalf (and may "shop around" within the pool until the parties find an acceptable expert); or (3) a

307. *See infra* Parts V.A–B.

"pure" inquisitorial paradigm, in which the court chooses the expert witness that testifies and whom the parties do not cross-examine. A table that reflects each of these paradigms and their most important elements is produced below:[308]

Adversarial	Modified Adversarial	Inquisitorial
Parties choose their own expert witness.	Parties choose their own expert witness from a pool of experts.	Court appoints its own expert witness.
Parties pay for the expert.	Parties pay for the expert.	Court pays for the expert.
Expert works for the party that retains her.	Expert works for the party that retains her.	Expert works independently of both parties.
Parties need not disclose the identity of experts with whom they consulted but do not hire.	Parties need not disclose the identity of experts with whom they consulted but did not hire.	Parties have no interaction with the expert witness outside of court.
Cross-examination is allowed.	Cross-examination is allowed.	Cross-examination is not allowed.

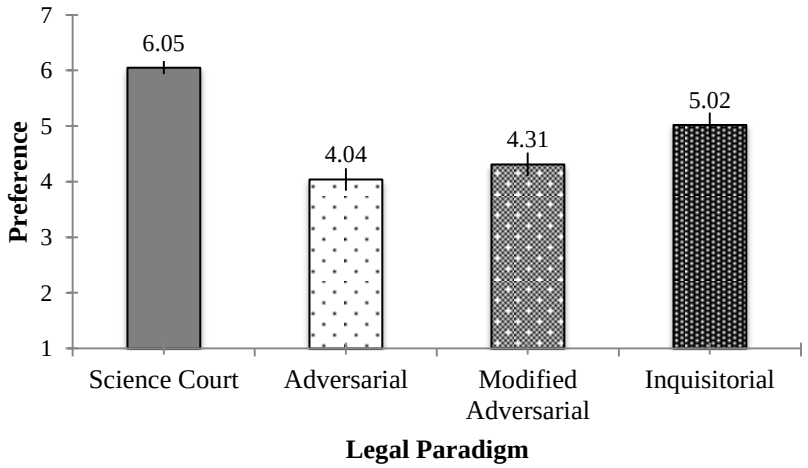
After reading the case and answering questions designed to test their comprehension, attention, and memory for the facts, participants rated how much they preferred each procedure (on a 7-point scale ranging from

308. The purpose of this experiment was to compare specific dispute resolution paradigms with respect to the perceptions of decisional accuracy and procedural legitimacy that they produce. As such, different components of these paradigms—for example, the parties' ability to cross-examine the expert and the extent to which the parties could choose their expert—did not always vary in tandem with each other.

"strongly do not prefer" to "strongly prefer"). Participants then answered demographic questions, were debriefed as to the aims of the study, and were dismissed.

2. Results and Discussion

To test whether participants preferred the proposed science court to the other models discussed above, I performed a one-way ANOVA on participants' preference for the decisionmaking procedures. The ANOVA revealed that participants differed with respect to their preferences.[309] Their preferences are illustrated below.



Most importantly, participants preferred the proposed science court to all other methods of resolving the legal dispute. I also performed conservative post-hoc statistical tests to determine whether participants preferred the proposed science court significantly to each of its competitors. These tests revealed that the proposed science court was highly preferred to the "pure" adversarial,[310] the modified adversarial,[311] and the "pure" inquisitorial[312]

309. $F(3, 276) = 21.69$, $p < .001$, $n^2_p = .19$.

310. *M-science-court* = 6.05 (*SD* = 1.00), *M-adversarial* = 4.04 (*SD* = 1.74), $p < .001$.

methods of resolving the legal dispute. This study provides evidence that the procedure for the science court proposed in this Article would enjoy the broadest support by litigants.

But an important question remains unanswered: why do the potential litigants in this sample prefer the proposed science court? Perhaps the proposed science court enjoys support because it is perceived highly in terms of the decisional accuracy and procedural legitimacy that it provides. This hypothesis is empirically testable. The final study reported in this Article examines whether that hypothesis is true.

B. Study 4: Accuracy, Legitimacy, and the New Science Court

In this section I report the results of a study conducted to examine whether the proposed science court, in addition to being the most preferred method for adjudicating complex scientific disputes, is also perceived as the most decisionally accurate and procedurally legitimate. The design and results of that study are reported below, along with a statistical analysis designed to demonstrate that litigants' preferences for the proposed science court are a result of its heightened perceptions of decisional accuracy and procedural legitimacy.[313]

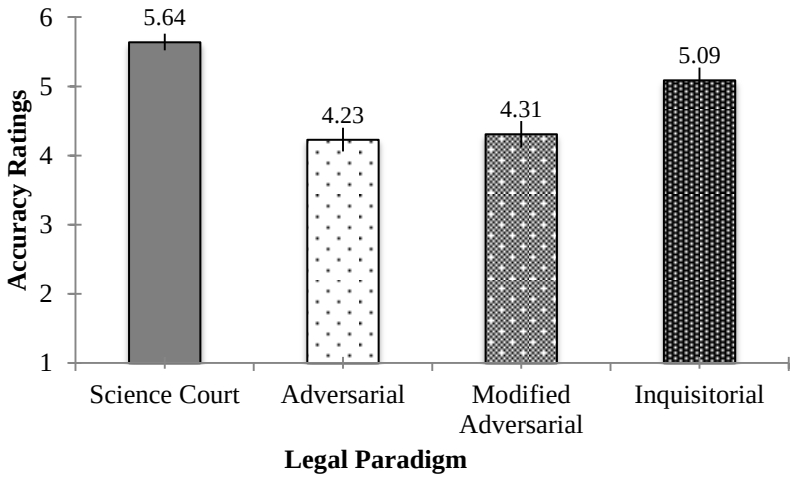
1. Decisional Accuracy

To test the hypothesis that the proposed science court enjoys heightened perceptions of decisional accuracy, I performed a one-way ANOVA on participants' perceptions of accuracy among all four procedural conditions. The results are illustrated below.

311. *M-science-court* = 6.05 (*SD* = 1.00), *M-modified-adversarial* = 4.31 (*SD* = 1.74), $p < .001$.

312. *M-science-court* = 6.05 (*SD* = 1.00), *M-inquisitorial* = 5.02 (*SD* = 1.80), $p < .001$.

313. The same participants from Study 4 also participated in Study 5. In addition to reporting their preferences for different legal procedures (Study 4), they also reported their perceptions of decisional accuracy and procedural legitimacy. Those results are reported separately here.



The one-way ANOVA revealed that mean perceptions of accuracy differed among the four groups.[314] I then performed conservative post-hoc tests to determine which experimental group's perceptions of decisional accuracy were meaningfully different from the others. The results revealed that the proposed science court was perceived as significantly more decisionally accurate than the "pure" adversarial model of resolving legal disputes[315] and its modified cousin.[316] The proposed science court, even under this conservative post-hoc statistical test, was perceived as more decisionally accurate than the inquisitorial model as well, even though the inquisitorial model was perceived as accurate in other studies reported in this Article.[317] These findings provide evidence that the proposed science court's perceived advantage with respect to decisional accuracy is at least one reason why litigants prefer it to the other decisionmaking paradigms discussed in this Article. But whether the proposed science court's advantage extends to procedurally legitimacy is an open question. I turn to that analysis below.

2. Procedural Legitimacy

I performed one final one-way ANOVA to determine whether the proposed science court also holds an advantage compared to other methods of

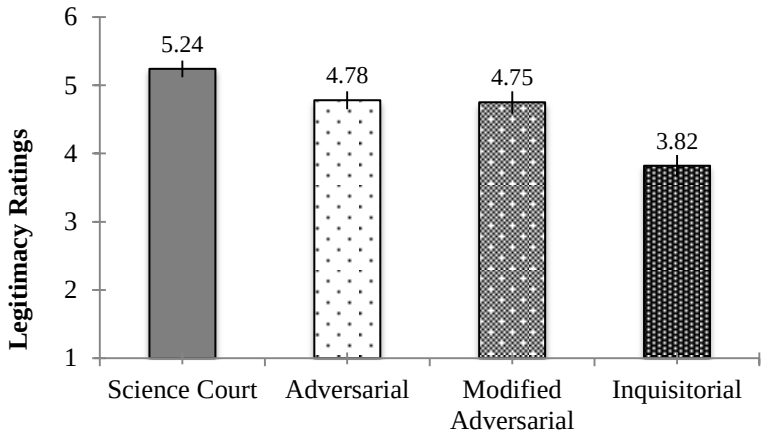
314. $F(3, 276) = 15.79$, $p < .001$, $n^2_p = .15$.

315. *M-science-court* = 5.64 (*SD* = 0.97), *M-adversarial* = 4.23 (*SD* = 1.49), $p < .001$.

316. *M-science-court* = 5.64 (*SD* = 0.97), *M-modified-adversarial* = 4.32 (*SD* = 1.58), $p < .001$.

317. *M-science-court* = 5.64 (*SD* = 0.97), *M-inquisitorial* = 5.09 (*SD* = 1.49), $p = .022$.

resolving scientific disputes with respect to its procedural legitimacy. The results are illustrated below.



The ANOVA revealed that perceptions of legitimacy differed as a function of the procedure to which the litigants were exposed.[318] Most importantly, the science court proposed in this Article enjoyed the highest perceptions of procedural legitimacy of each of the decisionmaking models tested. Conservative post-hoc tests reveal that perceptions of legitimacy were closer to each other than were perceptions of decisional accuracy; nonetheless, the proposed science court was perceived as significantly more legitimate than the "pure" adversarial model,[319] its modified cousin,[320] and the inquisitorial model.[321]

3. Multiple Mediation Analysis

These analyses suggest that potential litigants prefer the proposed science court, and that the proposed science court enjoys greater perceived decisional accuracy and greater perceived procedural legitimacy compared to the adversarial, modified adversarial, and inquisitorial decisionmaking paradigms. But these analyses do not examine whether litigants prefer the new science court *because* of its perceived advantage with respect to accuracy and legitimacy. A statistical technique called "mediation" can be used to make that determination.

318. $F(3, 276) = 17.09$, $p < .001$, $n^2_p = 16$.

319. *M-science-court* = 5.24 (*SD* = 0.96), *M-adversarial* = 4.78 (*SD* = 1.13), $p = .024$.

320. *M-science-court* = 5.24 (*SD* = 0.96), *M-modified-adversarial* = 4.75 (*SD* = 1.34), $p = .017$.

321. *M-science-court* = 5.24 (*SD* = 0.96), *M-inquisitorial* = 3.82 (*SD* = 1.30), $p < .001$.

Mediation, which is sometimes called a "path analysis," consists of a series of regressions designed to create a "path" between the predictor variable (in this case, the decisionmaking procedure to which litigants were exposed) and the outcome variable (here, litigants' preferences for that procedure).[322] Specifically, a path analysis can tell us whether the path from the procedure to which litigants were exposed to participants' preferences for the procedure is *mediated* by the procedure's perceived decisional accuracy and procedural legitimacy.[323]

We can think of a multiple mediation analysis as a series of predictive "connect-the-dots" statistical statements.[324] A successful mediation analysis would first demonstrate that the predictor variable predicts the outcome variable.[325] It would then show that the predictor variable also predicts both of the mediators, and that the mediators, in turn, predict the outcome variable.[326] Finally, the mediation would show that the initial effect of the predictor variable on the outcome variable is reduced (or even eliminated) when the mediators are added to the statistical model, which suggests that the mediators are responsible for the predictor variable affecting the outcome variable.[327]

With this understanding of a multiple mediation analysis in mind, I examined the relationship between the procedure to which litigants were exposed, their preferences for that procedure, their perceptions of the procedure's accuracy, and their perceptions of the procedure's legitimacy. First, I confirmed the results of Study 4 by examining via a regression analysis whether the procedure to which participants were exposed affected their preferences for the procedure. The regression analysis confirmed that a strong relationship exists between the two.[328]

---

322. Kristopher J. Preacher & Andrew F. Hayes, *Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models*, 40 BEHAV. RES. METHODS 879, 879 (2008) (explaining that "[m]ediation hypotheses posit how . . . an independent variable (*X*) affects a dependent variable (*Y*) through one or more potential intervening variables").

323. Mediation analysis detects "when a predictor affects a dependent variable indirectly through at least one intervening variable, or mediator." *Id.* The mediation analysis reported in this Article is performed using a linear regression analysis and reports unstandardized coefficients, "B," and standard errors, "SE." It also reports a "t" statistic, which determines whether the coefficients are statistically significant.

324. *Id.* at 879 (depicting a simple mediation model and explaining that "[predictor] variable *X*'s causal effect can be apportioned into its *indirect effect* on *Y* through [mediator] *M* and its *direct effect* on *Y*").

325. *Id.*

326. *Id.*

327. *Id.* at 880 (explaining that the total effect of predictor variable X on Y can be expressed as a sum of direct and indirect effects).

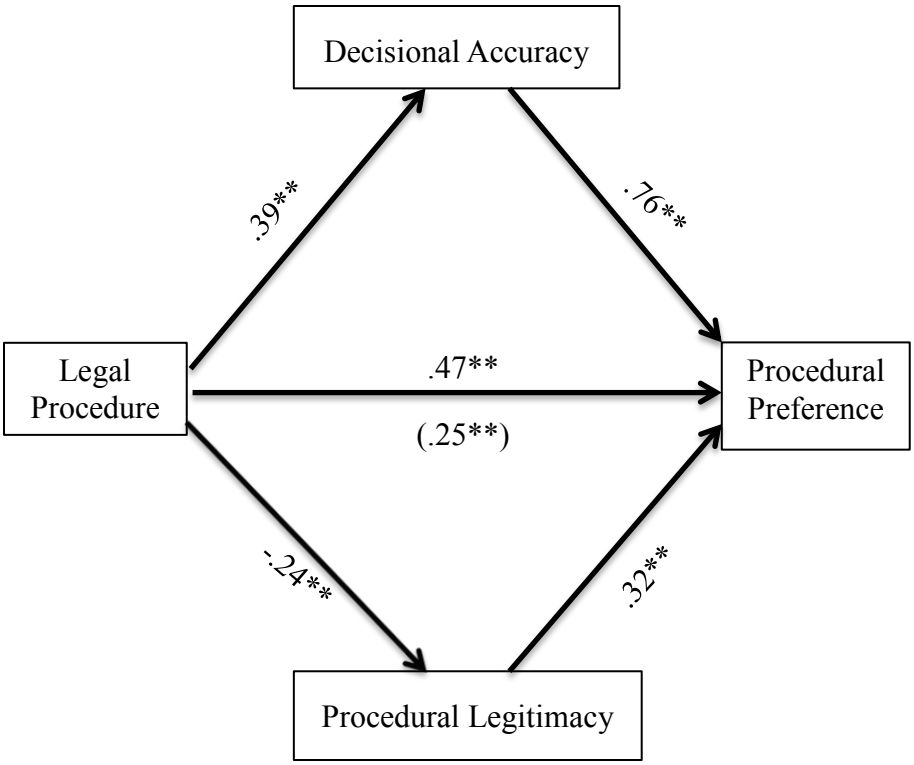
328. $B = .47$, $SE = 0.09$, $t = 5.20$, $p < .001$.

I next evaluated whether the procedure to which participants were exposed affected their perceptions of its accuracy and its legitimacy. A regression analysis confirmed that the procedure to which participants were exposed systematically predicted their perceptions of decisional accuracy.[329] Moreover, the same was true of their perceptions of procedural legitimacy.[330]

The third step in the mediation analysis establishes whether these perceptions of accuracy and legitimacy predict litigants' overall preferences for the procedures to which they were exposed. A regression of litigants' perceptions of the procedure's accuracy on their preferences for the procedure showed a significant relationship between the two variables.[331] Moreover, the same was true with respect to their perceptions of the procedure's legitimacy and their preferences for the procedure.[332] Thus, so far, the mediation analysis suggests that a statistically significant path exists between the predictor variable and the outcome variable: the procedure to which participants were exposed affected their perceptions of the procedure's decisional accuracy and its procedural legitimacy; moreover, these perceptions of accuracy and legitimacy significantly predicted their preferences for the procedure.

The final step is to demonstrate that the strength of the direct relationship between the procedure to which litigants were exposed and their preferences for it (absent the two mediators: accuracy and fairness) is significantly weakened when the mediators are included in the statistical model (on the theory that perceptions of accuracy and fairness reduce the effect from the original predictor variable). The effect of the procedure to which participants were exposed on their preferences for it is, on its own, strong and significant.[333] But that effect is significantly reduced when perceptions of decisional accuracy and procedural legitimacy are included in the model.[334] This suggests that accuracy and legitimacy mediate litigants' preferences for certain decisionmaking procedures. The relationship, which includes the regression coefficients, is illustrated in the figure below.

329. $B = .39$, $SE = 0.08$, $t = 5.04$, $p < .001$.
330. $B = -.24$, $SE = 0.07$, $t = -3.51$, $p < .001$.
331. $B = .76$, $SE = 0.06$, $t = 13.63$, $p < .001$.
332. $B = .32$, $SE = 0.06$, $t = 5.00$, $p < .001$.
333. $B = .47$, $SE = 0.09$, $t = 5.20$, $p < .001$
334. $B = .25$, $SE = 0.06$, $t = 4.19$, $p < .001$.



Finally, we can determine statistically the proportion of participants' preferences for the new science court that is attributable to the procedure's perceived decisional accuracy and procedural legitimacy. The analysis revealed that the procedure's accuracy and legitimacy account for nearly half of participants' preferences for it.[335] No other variables examined in these data account for that amount of litigants' total decisionmaking variability. This provides support for using accuracy and legitimacy as the two primary dimensions by which we gauge participants' preferences for decisionmaking procedures. The implications of this finding are discussed below.

335. The effect of the legal procedure to which participants were exposed on participants' preferences for that procedure, without including accuracy and legitimacy as mediators, is .47. When the mediators are included in the model, the effect of procedure is reduced to .25, which is a 47% reduction. Thus, the decisional accuracy and procedural legitimacy afforded by a legal procedure account for 47% of the variability in participants' preferences for that procedure.

VI. IMPLICATIONS, OBJECTIONS, AND CONCLUSIONS

Empirically-based approaches to institutional design can be enormously helpful to legal policymakers.[336] In designing a decisionmaking paradigm, policymakers can use real data to understand what litigants actually perceive about the paradigm and whether they actually prefer it to its alternatives.[337] Increased public support for the paradigm is an important aspect of that paradigm's success and longevity.[338]

This is especially true when designing a specialty tribunal, like the science court, which would remove certain cases from the dockets of traditional state and federal courts. Four original experiments reported in this Article identify the psychological perceptions that guide the public in determining whether to support a specialty court and demonstrate how to design that tribunal in a manner that maximizes those perceptions. Perhaps the most important lesson to draw from these experiments is that earlier science court architects were not prioritizing the relevant psychological principles, which is at least one reason that the science court failed to garner the degree of public support necessary to translate the proposal into successful policy.

This Article suggests empirically that there are two major factors that determine whether the public supports a decisionmaking system: the system's ability to produce accurate decisions and the level of procedural legitimacy that it conveys to litigants. Importantly, although these concepts are related, they are separate constructs. The first study suggests that litigants perceive the adversarial system as less accurate than it is fair.[339] Conversely, the inquisitorial system is considered less fair than it is accurate. This striking pattern of results supports the view that as we move across the decisionmaking continuum from greater control (which litigants possess under

336. *See, e.g.*, Stephen Giacchino & Andrew Kakabadse, *Successful Policy Implementation: The Route to Building Self-Confident Government*, 69 INT'L REV. ADMIN. SCI. 139, 139 (2003) (drawing upon an empirical study to determine what factors influenced the successful implementation of public policy in Malta, and in what way the government should organize itself to best deliver the policy); *see also* Will Rhee, *Evidence-Based Federal Civil Rulemaking: A New Contemporaneous Case Coding Rule*, 33 PACE L. REV. 60, 147 (2013) (explaining that evidence-based policymaking offers much promise for improving federal civil rulemaking, especially to address questions of controlling access to the courts and the amount of litigation brought).

337. *See, e.g.*, Philip J. Cook & Jens Ludwig, *Aiming for Evidence-Based Gun Policy*, 25 J. POL'Y ANAL. & MGMT. 691, 727 (2006) (explaining that empirical research can inform public policy on gun control by evaluating the public success of possible interventions and pinpointing the areas in which regulatory enforcement would be most effective).

338. *See, e.g.*, Paul Burstein, *The Impact of Public Opinion on Public Policy: A Review and an Agenda*, 56 POL'Y RES. Q. 29, 31 (2003) (commenting that public interest organizations can enhance policymakers' responsiveness to public opinion by providing useful information about what the public wants and concluding on the whole that policymakers can create effective policy by responding to public opinion).

339. *See supra* Part IV.B.

the adversarial model) to less control (which they possess under the inquisitorial model), different values are being prioritized.

The second study—which pitted the adversarial system against the inquisitorial system with respect to litigants' perceptions of decisional accuracy and procedural legitimacy—bolsters this conclusion.[340] American litigants perceived the American adversarial system as more procedurally legitimate than the inquisitorial system, but at a significant cost; the inquisitorial system was perceived to be the more accurate of the two decisionmaking paradigms.

Based on these principles, this Article proposes a redesigned science court with the following features: (1) expert witnesses chosen by the tribunal from a pool of approved experts; (2) experienced, science-savvy judges and law clerks; (3) trials by jury; and (4) the opportunity for rigorous cross-examination by the parties to the dispute. This design incorporates elements from both the adversarial side of the decisionmaking continuum—for example, trials by jury and cross-examination—and the inquisitorial side of the continuum—for example, court-appointed expert witnesses. The proposal is designed to incorporate the aspects of the adversarial and inquisitorial paradigms that, together, are likely to maximize litigants' perceptions of decisional accuracy and procedural legitimacy.

This Article proposes the new science court not just on theory, but also on empirical evidence. The final study reported in this Article was designed to test (1) whether the science court proposed in this Article is the most preferred method of resolving complex scientific legal disputes; and (2) whether the proposed court prioritizes decisional accuracy and procedural legitimacy as they are perceived by litigants.[341] The proposed science court does both. Litigants significantly preferred the proposed science court to three other methods of resolving complex scientific disputes: the status-quo adversarial method, the inquisitorial method, and a modified adversarial method in which each party selects their expert from a limited pool of scientists (and engages in the oft-described "battle of the experts"). Moreover, litigants perceived the proposed science court as more decisionally accurate and more procedurally legitimate than these other methods. A statistical path analysis confirmed that litigants' preferences for the proposed science court were largely based on these features of the proposal: its greater degree of decisional accuracy and its greater degree of procedural legitimacy.[342]

In sum, litigants prefer the proposed science court, and do so for reasons that we would expect based on theory and empirical data. These re-

340. *See supra* Part IV.C.

341. *See supra* Part V.A.

342. *See supra* Part V.B.

sults have a myriad of substantive implications. Specifically, these results provide meaningful lessons for policymakers regarding how to design legal decisionmaking systems, and they have broader implications for the role of science in the courtroom.

A. Implications and Future Directions

The data reported in this Article support the importance of evidenced-based policymaking. This is so particularly for issues of institutional design; proposals that are long on theory but short on actual empirical data might not be the best way in which to implement policy changes that enjoy broad public support. Empirical testing can identify not only which of several policy alternatives enjoys the broadest amount of popular support among the citizenry, but can also identify—and assist policymakers in maximizing—the psychological determinants of the public's preferences. To the extent that growing popular support exists for specialized courts—as evidenced by the popularity of the Delaware Court of Chancery, the Federal Circuit Court of Appeals, and the Federal Circuit Court of Bankruptcy courts[343]—empirical testing can assist policymakers in ensuring that these decisionmaking paradigms prioritize the values of the citizenry.

To that end, the findings reported here require further exploration and may have implications for the design of other decisionmaking bodies. Americans perceive not only that the adversary system is less accurate than it is fair, but also that the adversary system provides less accurate decisions than does the inquisitorial system.[344] This surprising (but robust) finding contradicts the views of policymakers who believe that cross-examination—one of the defining features of the adversary system—will "out" the true facts (and produce accurate decisions) by exposing those facts to rigorous vetting by advocates who are biased toward finding the

343. *See* Jurs, *supra* note 37, at 24–28 (describing the capacities of the Delaware Court of Chancery, the bankruptcy courts, and the United States Court of Appeals for the Federal Circuit to handle cases in their fields consistently, efficiently, and accurately); *see also* Lloyd D. George, *From Orphan to Maturity: The Development of the Bankruptcy System During L. Ralph Mecham's Tenure as Director of the Administrative Office of the United States Courts*, 44 AM. U. L. REV. 1491, 1501 (1994) (concluding that the bankruptcy court system has developed into a stable and progressive organization, able to manage large numbers of cases and highly complex litigation); Jacobs & Mireles, *supra* note 116, at 297 n.31 (noting that in the twenty years since the formation of the Federal Circuit, a coherent and consistent body of patent law has been developed, its stability stemming from the elimination of jurisdictional conflicts that had preceded the court's formation); Nees, *supra* note 114, at 531 (focusing on the popularity of the Delaware Chancery Court as a business court that has been modeled by fourteen jurisdictions to resolve complex commercial disputes, and concluding there is a need to monitor their evolving capacities for evaluation and mediation).

344. *See supra* Parts IV.B–C.

flaws in their opponent's evidence.[345] If cross-examination is not sufficient to alleviate the public's concerns that evidence produced to factfinders by biased advocates in the adversary system leads to less accurate verdicts, this can encourage policymakers to explore procedures that might complement cross-examination and alleviate litigants' concerns that courts in the adversary system do not produce the most accurate verdicts.[346] Continued research in this vein will address not only the accuracy of verdicts but also perceptions of equity by litigants—that different courts may reach different decisions about their cases depending on the skill of the biased advocate or the ability of the judge or jury to understand complex evidence.[347]

These data also support the notion that the public understands that, in the context of litigation, decisional accuracy and procedural legitimacy are distinct values that are not entirely compatible with each other. Litigants appear to perceive that the decision to design a decisionmaking system in an adversarial paradigm instead of an inquisitorial paradigm involves a tradeoff of competing values. This is consistent with, for example, the perspective held by many evidence scholars: that the laws of evidence involve a complex balancing act between creating rules that (1) assist factfinders in determining the truth of the matter in the litigation and (2) promote norms of fair play.[348] The data reported in this Article suggest that participants' perceptions of the adversary system track these commentators' views; they also suggest that, at least with respect to the use of scientific evidence in court, litigants sometimes prefer inquisitorial procedures—such as the use of court-appointed expert witnesses—that will increase perceptions of decisional accuracy at a cost of controlling the production of evidence. It is worth exploring whether this finding is applicable to other types of cases beyond those that involve scientific evidence.

The data reported in this Article have implications beyond institutional design; they also have implications for the debate over the use of scientific evidence in the courtroom.[349] To the extent that proposals like the science

345. *See* Thibaut et al., *supra* note 181, at 389–90 (explaining that the competitive presentation of evidence counteracts decisionmaker bias, producing fair and accurate decisions).

346. *See* Gertner, *supra* note 71, at 793 (voicing the concern that cross-examination may not lead to accurate verdicts when complex forensic procedures are at issue).

347. *See id.* at 792–93 (concluding that effective advocacy in cases involving complex forensic evidence requires familiarity with the scientific standards behind them).

348. *See generally* ALEX STEIN, FOUNDATIONS OF EVIDENCE LAW (2005); *see also* Harvey Rochman, *Due Process: Accuracy or Opportunity?*, 65 S. CAL. L. REV. 2705, 2709 (1992) (delineating a trade-off between accuracy and procedural fairness).

349. *See, e.g.*, Stuart F. Schlossman, *Some Considerations on the Misuse of Scientific Evidence in the Courtroom*, 41 N.Y.L. SCH. L. REV. 409, 411 (1997) (proposing that the legal system supplement the scientific knowledge of judges and juries by creating panels of unbiased scientists to help assess the validity of scientific claims made in the courtroom).

court receive attention by the legal academy and by legal policymakers,[350] they serve to increase public awareness of the validity and reliability issues that pervade the scientific techniques that are admitted into evidence.[351] The NAS Report provided a scathing critique of not only the quality of the science behind this evidence but also (1) the quality of the decisions by judges to admit the evidence into court; and (2) the quality of decisions rendered by the factfinder.[352] The data from this Article suggest that proposals to increase the quality of the inputs for the factfinder—that is, the quality of the scientific expertise—may benefit also from a focus on structural features of the trial, such as the manner in which evidence is presented to the factfinder. Moreover, because procedural legitimacy is also an important, and separate, consideration that the public considers when deciding whether to accept the verdicts of a decisionmaking body, these structural procedures cannot be implemented with a myopic focus solely on the increase in decisional accuracy that these new structures may promote. In sum, a partnership between the increasingly vocal critics of forensic science and architects of innovative institutional design can, in tandem, design a decisionmaking structure that will reduce the concerns raised by litigants, policymakers, academics, attorneys, and judges over the current shortcomings that courts face when evaluating scientific evidence. More research is, however, necessary.

B. Practical and Philosophical Objections

The redesigned science court faces substantial practical and philosophical hurdles before policymakers can implement it.[353] The objections are

350. *See generally* Jurs, *supra* note 37, at 3–4 (recounting the proposal for a science court in the 1970s and drawing upon the public debate in proposing a modern Court of Scientific Jurisdiction under Article III that would objectify scientific analysis, incorporate expertise into the decisionmaking process, and remove improper influences from the presentation of science in court).

351. *See, e.g.*, Cornelia Dean, *When Questions of Science Come to a Courtroom, Truth Has Many Faces*, N.Y. TIMES, Dec. 5, 2006, at F3 (commenting in the context of the Supreme Court hearing global warming arguments in Massachusetts v. EPA, 549 U.S. 497 (2007), that scholars and officials have proposed creating a science court to resolve factual disputes); *see also* Alice Dreger, *A Call for Passion in the Realm of Discovery*, N.Y. TIMES, Jan. 12, 1999, at F4 (opposing the use of court-appointed panels of scientists to evaluate scientific facts at issue in court cases, supporting instead funneling cases that turn on complex scientific issues to judges with the appropriate scientific training).

352. STRENGTHENING FORENSIC SCIENCE, *supra* note 32, at 85–110.

353. *See* Jurs, *supra* note 37, at 39 (explaining that just as the Kantrowitz proposal for a science court was attacked by critics before it faded into obscurity, so will any new science court proposal).

varied, and focus on (1) facets of the empirical evidence in support of the science court; and (2) facets of the science court itself.[354]

The biggest objection to the empirical evidence supporting the redesigned science court stems from its ecological validity.[355] If an experiment is ecologically invalid, it might tell us how the study participants behave in a laboratory, but would tell us little about how they would behave in the real world.[356] With respect to the redesigned science court, we might wonder whether participants' responses on survey data meaningfully predict how they actually behave. Prior research on this question is encouraging, and suggests that "pen-and-paper" laboratory studies tend to replicate into real world behavior roughly two-thirds of the time.[357] Moreover, unlike actual behavior, there is no obvious theoretical reason to believe that participants' *preferences* for different legal procedures would change systematically outside of the laboratory, and policymakers use these types of survey data routinely when making decisions about legal policy.[358]

The remaining practical concerns about the science court arise not from the empirical evidence but from the science court itself.[359] In discussing these concerns, it is important to clarify the scope of the normative recommendations included in this Article. If we believe that a science court is the policy solution to the scientific evidence crisis, then we should design that court in a manner that will boost its acceptance among the public. Earlier proposals, however, failed to identify and maximize those psychologi-

354. *See id.* at 12–14 (detailing both procedural and substantive criticisms of the science court, including the problem of separating science from fact in cases, as well as the possibility of a court bringing an "authoritarian finality" to scientific inquiry).

355. Ecological validity refers to the degree to which we are able to generalize about the findings inside the laboratory to the real world. *See* Marilynn B. Brewer, *Research Design and Issues of Validity*, *in* HANDBOOK OF RESEARCH METHODS IN SOCIAL AND PERSONALITY PSYCHOLOGY 3, 12 (Harry T. Reis & Charles M. Judd eds., 2000) (explaining that "ecological validity" refers to "whether an effect has been demonstrated to occur under conditions that are typical for the population at large").

356. *See id.* (commenting that the setting in which a causal principle is demonstrated may not resemble the settings in which that principle operates in real life).

357. Mark Kelman et al., *Context-Dependence in Legal Decision Making*, in BEHAVIORAL LAW & ECONOMICS 61, 73 (Cass R. Sunstein ed., 2000).

358. *See, e.g.*, Bettina Berendt et al., *Privacy in E-Commerce: Stated Preferences vs. Actual Behavior*, 48 COMM. OF THE ACM, Apr. 2005, at 101, 105 (finding from an empirical study of Internet users that EU e-privacy laws were often ineffective; while the laws assumed that Internet users would act according to their own privacy interests, participants' Internet behavior indicated that they derived a false sense of security from these laws).

359. *See* Jurs, *supra* note 37, at 39–40 (explaining that the proposal for a science court received criticisms of its procedures for selection of advocates and judges, what issues it should address, its methods of dispute resolution, its predisposition for authoritarianism, and its susceptibility to capture by special interests).

cal perceptions.[360] This Article focuses less on whether to adopt the science court itself—which is, in part, a philosophical question—but rather how to design it in the best way when proposing it. Although successful policy implementation involves myriad factors beyond public acceptance,[361] this is a substantial part of the equation; empirical and psychological evidence can provide valuable insight to policymakers regarding how to maximize this aspect of policy implementation.[362] Nonetheless, it is important to discuss some of the practical and philosophical concerns with the science court while noting that others have addressed them in more detail than I can here.[363]

Perhaps the greatest difficulties in implementing the science court involve issues of selection and scope: critics of the science court wonder how cases will be selected for the court, how the expert pools will be created, how judges would be selected, and the nature of appellate review.[364] None of these concerns is entirely novel and has been addressed by legal scholars.[365] For example, with respect to the jurisdiction of the science court, critics expressed concern that, because scientific evidence—in at least some form—is becoming so prevalent in modern litigation, the science court might collapse under its own weight by hearing too many cases.[366] Multipart tests for jurisdiction are designed to combat this problem, including restricting such cases to those that meet the test of diversity of citizenship,

360. *See* Arthur Kantrowitz, *Elitism vs. Checks and Balances in Communicating Scientific Information to the Public*, 4 RISK 101, 108 (1993) (commenting that the original proposal for the science court failed in part because "although both sides of the Washington politics-science complex would give lip service to the need for new procedures, they were unwilling to aid in creating an institution that might not be easy to control").

361. *See* Giacchino & Kakabadse, *supra* note 336, at 144 (explaining the array of factors necessary for successful policy implementation, including strong project management).

362. *See* Burstein, *supra* note 338, at 29 (explaining that there are substantial empirical relationships between opinion and policy, public opinion being influential even in the face of activities by interest organizations, political parties, and elites); *see also* Benjamin I. Page & Robert Y. Shapiro, *Effects of Public Opinion on Policy*, 77 AM. POL. SCI. REV. 175, 188–89 (1983) (concluding that there is a substantial congruence between opinion and policy, and that opinion changes are important causes of policy changes).

363. For a thorough argument for the viability of the science court, see generally Jurs, *supra* note 37, at 28 (discussing the benefits and criticisms of a proposed Court of Scientific Jurisdiction).

364. *See* Wilford, *supra* note 111 (noting that a scientific court would leave unresolved the problem of balancing scientific facts and value judgments in decisionmaking).

365. *See, e.g.*, Jurs, *supra* note 37, at 32–35 (proposing that judges be selected for a new science court based on experience in diverse scientific fields, and that all appeals go to a single forum in order to maximize expertise of appellate level review).

366. *See* Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 58–59 (1989) (acknowledging that expanding the specialized court's jurisdiction might overload its docket, but suggesting that creating specialized jurisdictions within regional circuits might relieve this pressure).

that have a complex scientific issue as the main issue in the case, and that require novel scientific expertise.[367]

Scholars have suggested that selecting the relevant legal actors—the expert witnesses and the presiding judges—might not be as daunting as critics believe.[368] Scholars have proposed that membership in scientific expert pools can be determined by criteria that can be gleaned from a candidate's resume—for example, the candidate's education, volume and placement of publications, number of research presentations, research grants attained, and work-related accolades—and from colleagues in the field—for example, reviews of the quality and impact of the candidate's body of work.[369] Judges would be selected for the court on the basis of additional education in the sciences—for example, a master's degree or doctorate in a scientific field—or through standardized, skills-based assessments.[370] Moreover, judges specially trained in a specific discipline would hear cases in "neighboring fields" to avoid potential bias.[371]

Perhaps the best proposal for appellate review of science court decisions suggests that it vest in the Federal Circuit Court of Appeals.[372] The court's considerable expertise in patent law could be expanded to other sciences by continuing to appoint science-savvy judges to the court and expanding the skill sets of judges who already sit on the court.[373] Vesting appellate review in panels of science-savvy Federal Circuit justices would also minimize potential concerns that either the science court judge—or the

367. Jurs, *supra* note 37, at 30–31. Some of these questions, of course, involve definitional ambiguity: for example, how do we determine whether existing procedural safeguards might lead the generalist factfinder to commit error? This dilemma underscores the need for additional empirical evidence. Data is collected daily from legal institutions including: the National Center for State Courts, the SCJ, the Arizona Jury Project, and from psychology departments at major research universities, regarding how factfinders understand—or fail to understand—scientific evidence. Mining these resources might provide policymakers with an empirical framework from which to decide which cases would be prime candidates for the science court.

368. *See* SAKS & VAN DUIZEND, *supra* note 104, at 95–96.

369. *See id.*

370. *See* Kantrowitz, *Proposal*, *supra* note 124, at 763–64 (commenting that the scientific judge's scientific background should enable him to more quickly assess the evidence and participate in cross-examination procedures).

371. Arthur Kantrowitz, *The Science Court—Another Alternative*, 18 PTC J. RES. & ED. 61, 64 (1976).

372. *But see* Dreyfuss, *supra* note 366, at 69–70 (acknowledging that the Federal Circuit is arguably a good venue to take on scientific questions because it deals with complex technological issues, but pointing out that bringing cases in this court would do nothing to solve the more fundamental problem that disputes arising as scientific questions are in fact pure policy disputes).

373. *See, e.g.*, Jurs, *supra* note 37, at 35 (explaining that the Federal Circuit Court of Appeals would be a natural location for an appeals forum for the science court because it often handles the complex science and technology involved in patent law).

expert that she selects—is biased with respect to the scientific issue in the litigation.[374]

In sum, considerable practical and philosophical concerns about the science court abound, and the concerns addressed here represent just a sample.[375] Yet none of these concerns appears insurmountable.[376] The guiding principle seems to be—not just with respect to the practical concerns raised about the science court, but about the very nature of the science court itself—the importance of empirically-based research and policy solutions. Whether to mollify policy critics or to garner maximal public support for the policy (which may, in turn, increase the willingness of policymakers to act), empirically-supported solutions provide uniquely important contributions to these policy debates. Policymakers would be wise to encourage their use and to rely on them accordingly.

C. Conclusions

The scientific evidence crisis is a crisis of our own making. There can be little doubt that the crisis was paved with good intentions. Expertise—and in particular, scientific expertise—can be an exceedingly important tool for assisting decisionmakers who are tasked with rendering verdicts in cases arising from complex civil and criminal disputes. But policymakers' eagerness to assist factfinders in this capacity may have spread too quickly too soon, and has not only allowed disciplines that rely on questionable science into the courtroom, but has also solidified their role in legal decisionmaking, even in the face of mounting criticism from actors from all areas of the legal and scientific communities.

Attempts to purify the quality of the scientific evidence admitted into court is an important first step in this process, and (albeit slowly) courts appear more receptive to these criticisms than they have been in the past. But improving the quality of the evidence is only half the battle: As Judge Gertner has noted, we "should not let courts or lawyers off the hook."[377] We must also examine the manner in which scientific evidence is considered by legal factfinders and decide whether better alternatives exist.

---

374. *See id.* at 74 (noting that regional circuits would be well-positioned to prevent parochialism and correct bias in review of patent court decisions).

375. *See, e.g.*, James A. Martin, *The Proposed "Science Court,"* 75 MICH. L. REV. 1058, 1085 (1977) (detailing other concerns with the proposal for a science court, including that "public funding of research in particular scientific areas may be curtailed by determinations of a science court on those matters").

376. *See, e.g.*, Jurs, *supra* note 37, at 39–40 (explaining that a new science court could avoid a predisposition of authoritarianism by enforcing the precedential effects of case law, and that it could avoid judicial myopia resulting from decisionmaking in one area by promoting judicial interest in areas beyond the fields of specialization).

377. Gertner, *supra* note 71, at 793.

To that end, a science court that is shown empirically to maximize the public's perceptions of the court's decisional accuracy *and* its procedural legitimacy is an important proposal that policymakers should consider. Other proposals are welcome, and empirical researchers must keep working on this important and urgent issue. Litigants like Sally Clark and Douglas Prade are counting on us.