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ARTICLES

EPISTEMIC EXCEPTIONALISM

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Although most rules of evidence and procedure are not limited by their terms to jury proceedings, courts often apply more permissive standards in proceedings involving judges rather than juries as factfinders. They do so, often explicitly, on the basis of "epistemic exceptionalism"—the claim that judges' cognitive processes can be trusted to operate with greater competence and objectivity than those of laypersons even in the absence of evidentiary and procedural constraints.

This Article describes two areas of law in which epistemic exceptionalism manifests: first, a tendency among courts to exempt pretrial and bench trial proceedings from rules of evidence intended to guard against the effects of cognitive biases and fallacies to which human cognition is susceptible; and second, a tendency to displace the jury in favor of judicial factfinding where judges conclude that the factfinding task is too difficult for the jury to perform competently. Surveying the empirical literature on human cognition generally and judicial cognition specifically, it argues that the claims of epistemic exceptionalism are, at best, exaggerated—while judges are less susceptible to some kinds of cognitive error, the cognitive differences between judges and laypersons are generally small in magnitude and insignificant in comparison to the extent to which both groups show similar susceptibility to cognitive illusions, implicit bias, and motivated reasoning. Moreover, generalist judges have little advantage over lay jurors in interpreting complex evidence in domains outside judges' legal expertise. Thus, doctrines grounded in epistemic exceptionalism risk increasing the influence of cognitive error in judicial decisions, and they preempt the jury's factfinding prerogatives in favor of generalist judges for no corresponding benefit.

This Article offers three tiers of solutions to the problem of epistemic exceptionalism, ranging from doctrinal corrections of specific manifestations at the lowest level, through a middle tier of institutional reforms, and culminating with a discussion of how to instill a culture of epistemic humility within judicial institutions.

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When all is said and done, we must face the fact that judges are human.[1]

I. INTRODUCTION

In Greek and Roman mythology, Icarus was a young boy whose father, Daedalus, crafted pairs of wings from wooden frames covered in bird feathers to escape the island of Crete, where they were imprisoned by King Minos.[2] Although Daedalus warned his son not to fly too high, lest the sun melt the wax binding the feathers to the wooden frame, Icarus, in a burst of exuberant overconfidence, disregarded his father's warning and ascended higher and higher, with predictable results. The wax melted, the artificial wings disintegrated, and Icarus plunged to his death.[3] The moral is self-evident: those who disregard the limits of their own abilities do so not only to their own peril, but, as seen through Daedalus' grief at his son's death, to the peril of those around them.

The story of Icarus has long been invoked as a warning to those whose overconfidence threatens to undermine their own goals. This Article adds a new group to that list: Judges who, in the belief that their intelligence, legal training, and good faith grant them a competence and objectivity beyond that of which laypersons are capable, either disregard rules of evidence intended to mitigate the effects of cognitive bias or displace the jury's factfinding prerogatives on the ground that the facts of the case are too complex for jurors to evaluate. I refer to this belief in judges' superhuman cognitive capacities as *epistemic exceptionalism*, as it is characterized by the premise, often stated explicitly, that judges are more intellectually capable, more fair-minded, and less susceptible to a variety of cognitive fallacies and motivated reasoning than jurors.

Epistemic exceptionalism provides at least a superficial answer to several puzzling questions.[4] Why do courts applying the Federal Rules of Evidence (FRE) routinely adopt more lenient standards of admissibility,[5] or in some instances hold the rules entirely inapplicable, to pretrial and bench trial proceedings? Why do they so rarely invoke the authority provided by FRE 706 to appoint independent experts as witnesses or advisors to the court? And why have they approved the transfer of factfinding authority from the jury to the judge in some cases deemed too complex for a jury to adjudicate? All these doctrines are justified by an appeal to some form of epistemic exceptionalism. In some cases, this appeal is active and explicit, as when courts hold that rules providing for the exclusion of prejudicial evidence do not apply in bench trials because judges are presumed capable of disregarding the prejudicial effect of such

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1. JEROME FRANK, COURTS ON TRIAL: THE MYTH AND REALITY IN AMERICAN JUSTICE 410 (1949).

2. OVID, METAMORPHOSES bk. VIII: 183-235 (Horace Gregory trans. 1958).

3. *Id.*

4. This answer is superficial because I believe the doctrines rationalized by epistemic exceptionalism are ultimately motivated by deeper institutional incentives. *See infra* Part IV.A.

5. For convenience, this Article will treat the federal system as the paradigm case. However, the phenomena addressed herein apply equally to generalist state courts.

evidence and considering only its probative value. In others it is passive, as when judges' failure to perceive their need for independent technical advice causes them to decline to appoint third-party experts under FRE 706. In all these instances, however, legal outcomes turn on judges' overestimation of their own cognitive capacities.

This Article examines the empirical basis of epistemic exceptionalism and finds the premise of judicial cognitive superiority, at best, exaggerated. Federal judges are indeed exceptional in their intellectual and professional achievements; a random sample of the federal judiciary would almost surely rate higher in general intelligence, educational background, and professional achievement than a random sample of the general American public.[6] The problem is that doctrines grounded in epistemic exceptionalism tend to overestimate judges' concededly exceptional abilities. It is true that judges are less prone to *some kinds* of cognitive errors and may be somewhat less susceptible to outcome-oriented reasoning than laypersons when performing technical tasks of legal reasoning.[7] But on the whole, judges show susceptibility to cognitive illusions, fallacies, and implicit biases that is comparable to that of laypersons. The few contexts in which they demonstrate statistically significant advantages do not justify the degree of confidence in judges' epistemic irreproachability that courts display in, for example, holding that provisions of the FRE requiring proposed expert witness testimony satisfy criteria of scientific reliability apply with less force in bench trials because judges can be trusted to evaluate such evidence more effectively than jurors.[8] Epistemic exceptionalism is defined by the gap between judges' actual epistemic capacities and the perception of those abilities expressed in appellate doctrine and the discretionary practices of trial courts. As we shall see, that gap is substantial. Courts' reliance on the assumptions of epistemic exceptionalism therefore threatens the integrity of the legal process in myriad ways.

If epistemic exceptionalism threatens the quality of judicial decision-making, what is to be done? The problem is multifaceted, and so a multi-tier solution is necessary. Relatively simple doctrinal reforms are adequate to resolve most of the specific manifestations of epistemic exceptionalism discussed in this Article—for example, the FRE should be interpreted consistently with their text to apply equally to bench trials, jury trials, and most pretrial proceedings in which evidence is introduced, and courts should reject "complexity exceptions" to the Seventh Amendment right to jury trial that displaces jury factfinding with generalist judges. But addressing specific manifestations does not resolve the underlying problems. Thus, a second tier of institutional reforms may also be necessary—for example, we should consider imposing a single-blind bifurcated model of adjudication in which admissibility decisions are made during the pretrial phase before one judge, and the case is tried before a second judge from

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6. *See* Valerie Hans, *Judges, Juries, and Scientific Evidence*, 16 J. L. & POL'Y 19, 29-31 (2007) (discussing differences in educational background between judges and laypersons).

7. *See infra* Part III.A.

8. FED. R. EVID. 702; *see infra* Part II.A.3.

whom the pretrial record is sealed. Because judges' general failure to appreciate the need for independent expertise contributes at least in part to their reluctance to appoint such experts under FRE 706, the rules should be changed to "nudge" judges toward making such appointments the norm rather than the exception. Above all, though, doctrines grounded in epistemic exceptionalism will persist until a culture of epistemic humility—an awareness of one's cognitive limitations and a commitment to act in accordance with that awareness—is instilled within the judiciary. The process of cultural change will surely be long, but it is the best hope of permanently diminishing the effects of epistemic exceptionalism on legal processes.

This Article proceeds as follows. Part II describes some manifestations of epistemic exceptionalism in evidentiary double standards and invasions of the jury's factfinding prerogatives. Part III surveys the empirical literature relevant to the assumptions of epistemic exceptionalism, first by examining the biases, fallacies, and other cognitive illusions to which human cognition in general is susceptible, and second by examining the body of literature concerning the susceptibility of judges to those effects. It also examines the extent to which judges possess a domain-general epistemic superiority in interpreting complex or technical evidence in comparison to jurors. Part IV examines the institutional logic of epistemic exceptionalism, arguing that doctrines rationalized on the surface by appeals to judges' superior cognitive endowments in fact are motivated by the judiciary's vulnerable position vis-à-vis the other branches of government. It then offers a three-tiered prescription for mitigating the distorting effects of epistemic exceptionalism on the legal process. Part V concludes.

II. EPISTEMIC EXCEPTIONALISM IN EVIDENCE AND CIVIL PROCEDURE

This Part will draw on examples from the law of evidence and civil procedure to demonstrate how the assumptions of epistemic exceptionalism shape legal doctrine. The manifestations of epistemic exceptionalism surveyed in this Part are intended only to highlight some of the more conspicuous examples of the phenomenon rather than to provide a full catalog or taxonomy. The problem of epistemic exceptionalism is broader than the specific manifestations addressed here; thus, the solutions considered in Part IV are likewise more comprehensive in their scope.[9]

A. Evidentiary Double Standards

We should note at the outset the broad and largely undifferentiated scope of the FREs' coverage. Schauer observes that "the immediate absence of a jury is taken by many trial judges as sufficient cause to treat the law of evidence as somewhere between only mildly suggestive and largely irrelevant,"[10] a double standard that finds no purchase in the text of the FRE. FRE 1101(a) states that the

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9. *See infra* Part IV.B.2-3.

10. Frederick Schauer, *On the Supposed Jury-Dependence of Evidence Law*, 155 U. PA. L. REV. 165, 175 (2006).

FRE apply to, among other things, "proceedings before United States district courts." The rule makes no general distinction between pretrial and trial phases,[11] or between trial before a petit jury and bench trial,[12] yet courts have routinely imposed a lower standard of admissibility in pretrial and bench trial proceedings explicitly on the rationale that judges, unlike juries, have less (or no) need for the cognitive protection that the rules providing for exclusion of unreliable or unduly prejudicial evidence provide, or that judges are more capable than juries of interpreting and applying expert witness testimony without the reliability guidelines of FRE 702.[13]

1. Rules Applying to Prejudicial Evidence.—We begin our survey of the manifestations of epistemic exceptionalism within courts' application of the FRE with the rules most explicitly designed to guard against the effects of cognitive bias: FRE 403 and FRE 609, both of which provide for the exclusion of relevant evidence where the court determines that the probative value of the evidence is outweighed by its prejudicial effect.[14] The Advisory Committee Notes to FRE 403 explain that the rule is intended to guard against, among other things, the "harm likely to result" from the introduction of evidence that risks "inducing decision on a purely emotional basis."[15] As a textual matter, FRE 403 applies to

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11. FED. R. EVID. 104(a) exempts certain preliminary proceedings concerning the admissibility of evidence.

12. FED. R. EVID. 1101(d) exempts proceedings before a grand jury.

13. *See, e.g.,* Lucien v. Welborn, 46 F.3d 1133 (table), 1995 WL 29481, at *3 (7th Cir. 1995) ("In a bench trial, we presume that the trial judge will consider only relevant and admissible evidence in reaching his or her findings."); United States v. Cardenas, 9 F.3d 1139, 1156 (5th Cir. 1993) ("The prejudicial impact of erroneously admitted evidence in a bench trial is presumed to be substantially less than it might have been in a jury trial [because] 'a judge . . . is presumed to have rested his verdict only on the admissible evidence before him and to have disregarded that which is inadmissible.'") (quoting Gov't of Canal Zone v. Jimenez, 580 F.2d 897, 898 (5th Cir. 1978)). *But see* In re Oil Spill by the Amoco Cadiz, 954 F.2d 1279, 1305 (7th Cir. 1992) ("The Federal Rules of Evidence are statutes, and district judges may not disregard statutes no matter how inconvenient or cumbersome they believe the rules to be.").

14. FRE 403 states in relevant part that "[t]he court may exclude relevant evidence if its probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence." FRE 609 identifies several circumstances in which evidence of a prior criminal conviction is admissible to impeach a witness's character for truthfulness. FRE 609(a) provides that, for felonies within the convicting jurisdiction, evidence "must be admitted, subject to [FRE] 403," where the witness is not a defendant, and "must be admitted . . . if the probative value of the evidence outweighs its prejudicial effect to that defendant" in a criminal case where the witness is a defendant.

As FRE 403 is the more general rule, and is incorporated by reference into FRE 609(a)(1)(A) and by substance into FRE 609(a)(1)(B), this discussion will focus primarily on it, while citing a few cases demonstrating that courts have imposed an identical double standard on admissibility under FRE 609(a).

15. FED. R. EVID. 403 advisory committee's note to 2011 amendment.

jury and bench trials.[16] We have already noted that the FRE, by their general terms, make no distinction between bench trials and jury trials in the scope of their application.[17] And only one of FRE 403's several bases for exclusion—misleading the jury—is limited to juries. By implication, the other bases apply to non-jury proceedings.

Nevertheless, courts have consistently held that FRE 403 does not permit the exclusion of evidence as excessively prejudicial at a bench trial, and, in some cases, that excluding evidence on that basis is a reversible abuse of discretion. That was the holding, for example, in *Schultz v. Butcher*, in which the Fourth Circuit vacated a bench trial judgment where the trial judge had excluded evidence that a defendant had consumed alcohol prior to a boating accident as unduly prejudicial under FRE 403.[18] *Schultz* quoted approvingly from the Fifth Circuit's decision in *Gulf States Utilities Co. v. Ecodyne Corp.*, which stated that "[FRE] 403 assumes a trial judge is able to discern and weigh the improper inferences . . . and then balance those improprieties against probative value and necessity. Certainly, in a bench trial, the same judge can also exclude those improper inferences from his mind in reaching a decision."[19] The appeal to

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16. The same is true for FRE 609, which draws no distinction between bench and jury trials. Indeed, the FRE 609 Conference Committee Notes anticipate that evidence of prior convictions may be excluded as unduly prejudicial from non-jury trials. Whereas the Senate Judiciary Committee's notes focus on the potential for "the jury" to be prejudiced by evidence of prior convictions, the conference committee's notes refer more broadly to the "trier of fact." *Compare* S. Rep. No. 93-1277, *with* H.R. Rep. No. 93-1597.

17. FED. R. EVID. 1101(a).

18. Schultz v. Butcher, 24 F.3d 626, 631-32 (4th Cir. 1994).

19. Gulf States Utilities Co. v. Ecodyne Corp., 635 F.2d 517, 519 (5th Cir. 1981), *quoted in Schultz*, 24 F.3d at 632; *see also* United States v. Sperl, 458 F. App'x 535, 543 (6th Cir. 2012) ("Because this evidence was admitted during a bench trial, there was little danger of any prejudicial impact."); United States v. Kienlen, 349 F. App'x 349, 351 (10th Cir. 2009) ("Other circuits have held, and we agree, that excluding evidence in a bench trial under Rule 403's weighing of probative value against prejudice [is] improper."); United States v. Lim, 57 F. App'x 701, 704 (7th Cir. 2003) (rejecting appellant's arguments under FRE 403, "which are inapposite in a bench trial, where there is no risk of jury prejudice"); United States v. Hall, No. 98-6421, 2000 WL 32010, at *2 (6th Cir. Jan. 4, 2000) (per curiam) (provision of FRE 403 providing for exclusion on the basis of prejudicial effect has no application in a bench trial where it "has been seen as an unnecessary and 'useless procedure'" (quoting 22 CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., FEDERAL PRACTICE AND PROCEDURE § 5213 (1999))); Barfield v. Orange Cty., 911 F.2d 644, 651 (11th Cir. 1990) (distinguishing prior case in which EEOC report was deemed inadmissible under FRE 403 in jury trial: "the change from a bench to a jury trial may very well affect the analysis under Rule 403. The admission of an EEOC report, in certain circumstances, may be much more likely to present the danger of creating unfair prejudice in the minds of the jury than in the mind of the trial judge, who is well aware of the limits and vagaries of administrative determinations and better able to assign the report appropriate weight and no more.").

Courts have applied the same logic to the analysis of admissibility under FRE 609(a). *See, e.g.*, Dixon v. Henderson, 186 F. App'x 426, 429-30 (5th Cir. 2006) ("[T]he provision of [FRE 403]

epistemic exceptionalism is clear: judges need not—indeed, *cannot*—exclude relevant evidence as unduly prejudicial because they are presumed to be capable of mentally segregating the prejudicial effect from their deliberations in a way that jurors cannot. To suggest otherwise would be to pierce the veil of superhuman objectivity and competence on which courts' institutional legitimacy relies.[20]

2. Rules Applying to Character Evidence.—The FRE generally prohibit evidence of "a person's character or character trait . . . to prove that on a particular occasion the person acted in accordance with the character or trait."[21] This rule is subject to some exceptions primarily involving the right of a criminal defendant to introduce evidence of *good* character as probative of a lack of guilt, subject to the prosecution's right to then introduce evidence of the defendant's bad character in rebuttal.[22] Some courts have held that evidence of a party's bad character, even if technically inadmissible, is nonetheless less prejudicial in a bench trial for reasons explicitly grounded in epistemic exceptionalism. In *Jemison v. Simmons*, for example, the plaintiff in an action under 42 U.S.C. § 1983 argued that evidence of his disciplinary problems in prison was improperly introduced as evidence of his bad character at trial.[23] The court held, first, that the evidence was not introduced to show that the defendant acted in conformity with his bad character in the specific incident at issue, but went on to note that "even if we were to assume this evidence was inadmissible, '[i]n bench trials, judges routinely hear inadmissible evidence that they are presumed to ignore when making decisions.'"[24]

FRE 404(b) addresses the admissibility of a particular type of character evidence—evidence of a past "crime, wrong, or other act."[25] Such evidence is not admissible to show that a person acted on a specific instance in accordance with the character revealed by the prior bad act,[26] but it *is* admissible against a criminal defendant if offered for "another purpose, such as proving motive, opportunity, intent, preparation, plan, knowledge, identity, absence of mistake, or lack of accident."[27] A determination of admissibility under FRE 404(b) is a two-step process. First, the evidence must be offered for a legitimate "other purpose" and

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allowing for the exclusion of evidence if the probative value is outweighed by the danger of unfair prejudice had no application" in bench trial (citing FED. R. EVID. 609)); United States v. Caudle, 48 F.3d 433, 435 (9th Cir. 1995) ("The prejudice referred to [in FRE 609(a)] is the danger that jurors will convict because they have discovered that it would be prudent to lock the defendant up, even if they are not sure he committed the crime charged.").

20. *See infra* Part IV.A.

21. FED. R. EVID. 404(a)(1).

22. FED. R. EVID. 404(a)(2); *see* FED. R. EVID. 405 (methods by which character, if admissible, may be proven).

23. Jemison v. Simmons, 518 F. App'x 882, 888 (11th Cir. 2013).

24. *Id*. at n.6 (quoting Harris v. Rivera, 454 U.S. 339, 346 (1981)).

25. FED. R. EVID. 404(b)(1).

26. *Id*.

27. FED. R. EVID. 404(b)(2).

must be probative of that purpose.[28] Second, "the evidence must possess probative value that is not substantially outweighed by its undue prejudice and must meet the other requirements of rule 403."[29]

Because the second prong of FRE 404(b) admissibility essentially incorporates FRE 403's balancing test, it should come as no surprise that courts have adopted double standards with respect to the admissibility of this evidence that resemble the same standards under FRE 403. In *United States v. Reed*, for example, the Seventh Circuit rejected the defendant's argument that admission of evidence of his prior conviction for possession of heroin with intent to distribute was unduly prejudicial in a subsequent prosecution for the same offense.[30] The court held that admission of the evidence was "questionable under our current case law," but that the error was harmless.[31] It acknowledged, however, that "had the evidence come before a jury, we may have come to a different conclusion, but we presume that the court was not unduly influenced by this weak pattern evidence."[32] *Reed* is representative of the general rule that courts apply a more deferential standard of admissibility and harmless error review to prior act evidence under FRE 404(b) because they presume the trial judge to be more resistant to the prejudicial effects of such evidence than jurors would be.[33]

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28. Where the "other purpose" for which the evidence is offered is itself not a material issue in the prosecution, the evidence is inadmissible. *See, e.g.*, United States v. Wright, 901 F.2d 68, 69 (7th Cir. 1990) (recorded phone call of defendant making general statements about drug dealing inadmissible under 404(b) for purpose of showing "intent" in prosecution for sale of drugs to undercover officers where "no issue of intent in this case—no question, for example, whether Wright knew what was in the packages that he sold the plainclothes officer."). Moreover, prior bad act evidence is inadmissible under FRE 404(b) where the evidence is not probative of the "other purpose" for which it is purportedly introduced. *See id*. (same recording inadmissible under FRE 404(b) for purpose of showing "identity" where the recorded conversation made no reference to the specific transaction at issue and thus "does not in the least show that the man who had sold the plainclothes officers four bags of crack six months earlier was correctly identified as Stanley Wright.").

29. United States v. Beechum, 582 F.2d 898, 911 (5th Cir. 1978).

30. United States v. Reed, 744 F.3d 519, 523 (7th Cir. 2014).

31. *Id*. at 525.

32. *Id*. at 525-26.

33. *See, e.g.*, United States v. DNRB, Inc., 895 F.3d 1063, 1068 (8th Cir. 2018) ("[T]he admission of [prior crime evidence] was not unduly prejudicial. It corroborated other evidence concerning DNRB's intent, and we presume that a judge conducting a bench trial will use evidence properly, mitigating any prejudice."); United States v. Sperl, 458 F. App'x 535, 543 (6th Cir. 2012) ("Because this evidence was admitted during a bench trial, there was little danger of any prejudicial impact."); United States v. Duran-Colon, 252 F. App'x 420, 423 (2d Cir. 2007) (prior crimes evidence not unduly prejudicial "[i]n the context of a bench trial . . . [where] the factfinder knows the purpose for which evidence is admitted and is presumed to rest his verdict on the proper inferences to be drawn from such evidence"); United States v. Hassanzadeh, 271 F.3d 574, 578 (4th Cir. 2001) (evidence of defendant's prior conviction was not unduly prejudicial in bench trial; "we

3. The Hearsay Rule.—Courts' application of the hearsay rule is also influenced by epistemic exceptionalism, albeit less consistently than their application of FRE 403. Some courts do at least pay lip service to the premise that the hearsay rule applies with equal force in a bench trial, but many of those courts accept the practice of postponing rulings on motions to exclude evidence until after trial—allowing potentially inadmissible evidence in under the pretense that the judge will disregard it should she conclude, post-trial, that the evidence was inadmissible. Other courts apply a "liberal" standard of hearsay admissibility in bench trials, often explicitly rationalized by an appeal to epistemic exceptionalism.

Prior to the enactment of the FRE,[34] judicial practice granted judges some latitude concerning the application of the hearsay rule in bench trials.[35] Although some contemporary commentators argued in favor of preserving courts' flexibility in dealing with hearsay evidence at bench trials,[36] the FRE, which supersede prior practice,[37] make no provision for doing so.[38] And, indeed, many courts in the FRE era have applied the hearsay rule in bench trials with no evident modification. For example, in *Broadcast Music, Inc. v. Xanthas, Inc.*, the Fifth Circuit reversed a trial court's holding that the hearsay rule does not apply to bench trials, noting that under FRE 802, hearsay is not admissible unless specific legal authority dictates otherwise, and that "no such authority creates an exception for bench trials."[39]

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have confidence that at the bench trial, the experienced district judge was able to separate the emotional impact from the probative value of this potentially prejudicial evidence.").

34. Act to Establish Rules of Evidence for Certain Courts and Proceedings, Pub. L. No. 93-595 (1975) (enacting the FRE).

35. *See, e.g.*, Kenneth Culp Davis, *Hearsay in Nonjury Cases*, 83 HARV. L. REV. 1362 (1970); A. Leo Levin & Harold K. Cohen, *The Exclusionary Rules in Nonjury Criminal Cases*, 119 U. PA. L. REV. 905, 908 (1971) (urging "candid recognition" of longstanding practice of lax enforcement of rules of evidence in nonjury cases).

36. *E.g.*, Davis, *supra* note 35, at 1365.

37. *See* Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 587 (1993).

38. *See* Fed. R. Evid. 104(a) (specifying certain "preliminary questions" to which the FRE do not apply); Fed. R. Evid. 802 (hearsay is generally inadmissible; no distinction drawn between bench and jury trials); Fed. R. Evid. 1101(a) (FRE apply, *inter alia*, to "proceedings before United States district courts"). To the extent any textual basis for the doctrines of epistemic exceptionalism exists, commentators have located it in FRE 102's statement of purpose, which provides that "[t]hese rules should be construed so as to administer every proceeding fairly, eliminate unjustifiable expense and delay, and promote the development of evidence law, to the end of ascertaining the truth and securing a just determination." Fed. R. Evid. 102. *See, e.g.*, Christopher B. Mueller & Laird B. Kirkpatrick, 1 FEDERAL EVIDENCE § 1:3 (4th ed. 2017). As this Article will show, however, there is little reason to believe that the doctrines of epistemic exceptionalism facilitate the ends of truth or justice.

39. Broadcast Music, Inc. v. Xanthas, Inc., 855 F.2d 233, 238 (5th Cir. 1988). *See also, e.g.*, Paramount Farms Int'l LLC v. Ventilex B.V., 500 F. App'x 586, 588 (9th Cir. 2012) (affirming exclusion of hearsay from bench trial); Magnoni v. Smith & Laquercia, 483 F. App'x 613, 616 (2d

Other courts, however, apply a looser standard of admissibility to hearsay evidence in bench trials[40] and pretrial proceedings.[41] Such courts, if they offer a rationale at all, usually justify the practice by reference to epistemic exceptionalism. Thus, in *McQuown v. United States*, a pre-FRE decision, the court commented that "[a] large part of the purpose of the [hearsay] rule—the protection of jurors deemed impressionable—is lost in a trial conducted by a judge alone."[42]

A third approach also exists, in which judges admit hearsay evidence provisionally or defer ruling on its admissibility until after trial—effectively admitting the evidence subject to possible post-trial exclusion should the judge conclude that the evidence was inadmissible.[43] Appellate courts have held that so long as a judge makes no explicit reference to inadmissible evidence in her decision, the provisional admission of evidence subsequently deemed inadmissible does not constitute reversible error.[44] Although no court of which I

Cir. 2012) (affirming exclusion of hearsay from bench trial); United States v. W.B., 452 F.3d 1002, 1004 (8th Cir. 2006) (applying hearsay analysis to bench trial).

40. *See, e.g.*, Concrete Works of Colo., Inc. v. City & Cty. of Denver, 321 F.3d 950, 989 (10th Cir. 2003) (approving the district court's approach to anecdotal evidence at bench trial, in which the district court "expansively accepted hearsay and applied a liberal standard of relevance" (quoting Concrete Works of Colorado, Inc. v. City and County of Denver, Colo. 86 F. Supp. 2d 1042, 1071 (D. Colo. 2000)); Null v. Wainwright, 508 F.2d 340, 344 (5th Cir.1975) ("Strict evidentiary rules of admissibility are generally relaxed in bench trials."); Cobell v. Norton, 224 F.R.D. 266, 285 (D.D.C. 2004) ("In conducting civil bench trials, trial courts are afforded broader than usual latitude to admit evidence as they see fit, even hearsay evidence the Judge deems reasonably reliable and probative."); *cf.* G. Michael Fenner, *The Forced Use of Inadmissible Hearsay Evidence in Bankruptcy Court*, 8 AM. BANKR. INST. L. REV. 453, 476 (2000) (describing disregard of FRE in bankruptcy trials).

41. *See, e.g.*, Sierra Club, Lone Star Chapter v. F.D.I.C. 992 F.2d 545, 551 (5th Cir. 1993) ("[A]t the preliminary injunction stage, the procedures in the district court are less formal, and the district court may rely on otherwise inadmissible evidence, including hearsay evidence." (citing Fed. Sav. & Loan Ins. Corp. v. Dixon, 835 F.2d 554, 558-559 (5th Cir. 1987)); *see also* Mullins v. City of New York, 626 F.3d 47, 52 (2d Cir. 2010) (holding "that hearsay evidence may be considered by a district court in determining whether to grant a preliminary injunction"); Kos Pharmaceuticals, Inc. v. Andrx Corp., 369 F.3d 700, 718-19 (3d Cir. 2004) (holding the same).

42. McQuown v. United States, 199 Ct. Cl. 858, 870 (1972).

43. *See, e.g.*, Tewani Imports, Inc. v. Norwest Bank, N.A., 139 F. Supp. 2d 805, 812-13 (S.D. Tex. 2001) (applying hearsay analysis after bench trial to evidence received during trial).

44. *See, e.g.*, United States v. Paz-Alvarez, 799 F.3d 12, 29 (1st Cir. 2015); United States v. Roach, 164 F.3d 403, 409 (8th Cir. 1998); *cf.* Greenberg Gallery, Inc. v. Bauman, 817 F. Supp. 167, 170 n.3 (D.D.C. 1993) (retrospectively concluding that hearsay evidence introduced at bench trial was inadmissible and stating that "consideration of this hearsay must be precluded."); State v. Holiday, 745 N.W.2d 556, 568 (Minn. 2008) (erroneous admission of hearsay was harmless in a bench trial when court did not refer to the evidence in its findings of fact). Provisional rulings on evidentiary motions are permitted in jury trials as well, but unlike bench trials, a court concluding that provisionally admitted evidence is inadmissible "may give a cautionary jury instruction or, on

am aware has explicitly articulated a rationale for the practice of deferred rulings on contested hearsay, the obvious inference—made explicit in other contexts[45]—is that provisional admission works no harm in bench trials because judges, unlike jurors, can be trusted to exclude evidence subsequently deemed inadmissible from their deliberations.

4. Rules Applying to Expert Witness Testimony.—Courts' engagement with the rules of evidence concerning the admissibility and use of expert witness testimony has also been deeply influenced by epistemic exceptionalism. Because they believe judges to be more capable of understanding expert testimony and less intimidated by highly credentialed expert witnesses than jurors, courts have declined to apply, or apply only minimally, the rules of judicial gatekeeping to pretrial and bench trial proceedings. As in the case of the hearsay rule, this manifests in a range of approaches to applying the rules concerning the admissibility of expert witness testimony in pretrial and bench trial proceedings. Some courts, at least at the formal level, hold that these rules apply with equal force before judicial factfinders, sometimes while simultaneously undercutting that claim with the observation that the rationale for expert witness gatekeeping has no application in the absence of a jury. Other courts have applied a less rigorous standard of admissibility, or have authorized the provisional admission of expert evidence, with questions of admissibility to be decided post-trial. Moreover, courts' use—or rather, lack of use—of FRE 706's provision for the appointment of neutral experts suggests a failure on judges' part to grasp the extent of their need for independent assistance with scientific and technical evidence.

FRE 702 governs the admissibility of expert witness testimony. It states that:

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

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motion, declare a mistrial if an instruction would not prevent or cure the prejudice resulting from its provisional admission of the hearsay." United States v. Isabel, 945 F.2d 1193, 1199 n.10 (1st Cir. 1991). *See also* United States v. Freeman, 208 F.3d 332, 344 (1st Cir. 2000) ("Striking the evidence and issuing this curative instruction were sufficient to shield Freeman from prejudice caused by the provisional admission of Drew's hearsay testimony.").

45. *See supra* note 28 and accompanying text.

of the case.[46]

In *Daubert v. Merrell Dow Pharmaceuticals*, the Supreme Court held that FRE 702 imposes a "gatekeeping" obligation on the federal courts, pursuant to which "the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable."[47]

Aside from preliminary questions of the admissibility of evidence and certain miscellaneous proceedings, the FRE contain no exceptions for pretrial proceedings.[48] Yet some courts have held the reliability requirement of FRE 702 inapplicable to expert witness testimony introduced in pretrial proceedings, and have done so explicitly on the basis that judges are better able than jurors to evaluate expert witness testimony without the safeguards imposed by FRE 702 and *Daubert*. This issue has arisen, for example, around the use of predictive coding techniques to prepare responses to document requests in civil discovery.[49] In *Da Silva Moore v. Publicis Groupe*,[50] the plaintiffs objected to the magistrate judge's acceptance of the defendant's proposed predictive coding protocol in the absence of *Daubert*-compliant expert testimony establishing the protocol's reliability. The magistrate judge rejected the plaintiffs' objections, holding that FRE 702 applies only to testimony introduced at trial. FRE 702 and *Daubert*, the court wrote, "deal with the trial court's role as gatekeeper to exclude unreliable expert testimony from being submitted to the jury at trial."[51] As a doctrinal matter, the magistrate judge's ruling is clearly incorrect at the level of generality at which it was expressed. The Second Circuit has held that FRE 702 applies to evidence submitted in support of pretrial motions for summary judgment,[52] and

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46. FED. R. EVID. 702.

47. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 589 (1993); *see also* Kumho Tire Co. v. Carmichael 526 U.S. 137 (1999) (*Daubert* applies to "technical" as well as "scientific" expert testimony); Gen. Electric Co. v. Joiner, 522 U.S. 136 (1997) (*Daubert* applies to a proposed expert's methods and conclusions; district court's admissibility decision is reviewable for abuse of discretion).

48. *See supra* note 38.

49. *See* Seth Katsuya Endo, *Technological Opacity & Procedural Justice*, 59 B.C. L. REV. 821, 847-48 (2018); Daniel K. Gelb, *The Court as Gatekeeper: Preventing Unreliable Pretrial Ediscovery from Jeopardizing a Reliable Fact-Finding Process*, 83 FORDHAM L. REV. 1287 (2014); David J. Waxse & Brenda Yoakum-Kriz, *Experts on Computer-Assisted Review: Why Federal Rule of Evidence 702 Should Apply to Their Use*, 52 WASHBURN L. J. 207 (2013).

50. Da Silva Moore v. Publicis Groupe, 287 F.R.D. 182, 188 (S.D.N.Y. 2012) (Peck, Mag.); *cf.* Andrew Peck, *Search, Forward: Will Manual Document Review And Keyword Searches Be Replaced By Computer-Assisted Coding*?, LAW TECH. NEWS, Oct. 2011, at 25.

51. *Da Silva Moore*, 287 F.R.D. at 188-89.

52. Major League Baseball Properties, Inc. v. Salvino, Inc., 542 F.3d 290, 310-11 (2d Cir 2008) (citing additional cases). Indeed, the Federal Rules of Civil Procedure (FRCP) make this clear. Although a party need not "produce evidence in a form that would be admissible at trial in order to avoid summary judgment," Celotex Corp. v. Catrett, 477 U.S. 317, 324 (1986), FRCP 56(c)(2) provides that "[a] party may object that the material cited to support or dispute a fact

it has never suggested that FRE 702 does not apply to bench trials.[53] The court's assertion that FRE 702 serves only the purpose of jury protection and thus has no application to pretrial proceedings is not well-grounded in the text of FRE 702, the FRE as a whole, or *Daubert* and its progeny.[54] In this and other contexts, decisions excluding expert testimony introduced in pretrial proceedings from the scope of FRE 702 and *Daubert* are explicitly motivated by epistemic exceptionalism.[55]

Courts have also undermined the force of FRE 702 gatekeeping in bench trials. All of the circuit courts to address the issue have stated that the gatekeeping inquiry applies less stringently in bench trials than in jury trials.[56] "[W]hile *Daubert*'s standards must still be met" in a bench trial, "the usual concerns regarding unreliable expert testimony reaching a jury obviously do not arise when a district court is conducting a bench trial."[57] This is "obvious" for reasons explicitly grounded in epistemic exceptionalism: "[t]he 'gatekeeper' doctrine was designed to protect *juries* and is largely irrelevant in the context of a bench trial."[58] Juries must be shielded from unreliable scientific evidence, whereas

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cannot be presented in a form that would be admissible in evidence." Fed. R. Civ. P. 56(c)(2).

53. *See* Sparta Commercial Services, Inc. v. DZ Bank, 680 Fed. App'x 17, 19-20 (2d Cir. 2017) (affirming district court's exclusion of proposed expert testimony under FRE 702 in bench trial).

54. Every case in the *Daubert* trilogy involved expert witness testimony at the *summary judgment* stage—a pretrial proceeding in which no jury is involved. *See* Kumho Tire Co. v. Carmichael, 526 U.S. 137, 145 (1999); Gen. Elec. Co. v. Joiner, 522 U.S. 136, 140 (1997); Daubert v. Merrill Dow Pharm., Inc., 509 U.S. 579, 582 (1993).

55. *See, e.g.*, United States v. Ozuna, 561 F.3d 728, 737 (7th Cir. 2009) ("The purpose of *Daubert* was to require courts to serve as gatekeepers so that unreliable expert testimony does not carry too much weight with the jury. Judges, on the other hand, are less likely to be swayed by experts with insufficient qualifications.").

56. *See* F.T.C. v. BurnLounge, Inc., 753 F.3d 878 (9th Cir. 2014); David E. Watson, P.C. v. United States, 668 F.3d 1008 (8th Cir. 2012); Metavante Corp. v. Emigrant Sav. Bank, 619 F.3d 748, 762 (7th Cir. 2010) ("[T]he usual concerns of [FRE 702]—keeping unreliable expert testimony from the jury—are not present" in a bench trial.); Att'y Gen. of Ok. v. Tyson Foods, Inc., 565 F.3d 769 (10th Cir. 2009); United States v. Brown, 415 F.3d 1257, 1269 (11th Cir. 2005); Seaboard Lumber Co. v. United States, 308 F.3d 1283, 1301-02 (Fed. Cir. 2002); Gibbs v. Gibbs, 210 F.3d 491, 500 (5th Cir. 2000) ("Most of the safeguards provided for in *Daubert* are not as essential in a case such as this where a district judge sits as the trier of fact in place of a jury."). At least one state supreme court, however, has rejected the argument that gatekeeping standards apply differently in bench trials. *See* State v. Griffin, 273 Conn. 266, 280-81 (2005) ("[T]he fundamental purpose of a [*State v.*] *Porter*[, 241 Conn. 57 (1997)] hearing is the same irrespective of whether the trier of fact is a court or a jury . . . . Consequently, the standard for determining the admissibility of scientific evidence is not dependent upon the identity of the trier of fact.").

57. *Tyson Foods*, 565 F.3d at 779.

58. Deal v. Hamilton Cty. Bd. of Educ., 392 F.3d 840, 852 (6th Cir. 2004) (emphasis added); *see also BurnLounge*, 753 F.3d at 888 ("When we consider the admissibility of expert testimony, we are mindful that there is less danger that a trial court will be 'unduly impressed by the expert's

judges are "better equipped than a jury to weigh the probative value of expert evidence."[59] As we have seen with respect to other types of evidence,[60] some courts have approved admitting expert evidence provisionally by deferring a *Daubert* ruling until after the bench trial—preserving the gatekeeping function only in form, insofar as the questionable expert evidence is presented at trial before the judge makes a determination as to its admissibility.[61]

Courts' proclivity toward epistemic exceptionalism in connection with expert evidence is not limited to gatekeeping review under FRE 702. Judges' overconfidence in their abilities to interpret and apply expert witness testimony also becomes apparent in the utilization—or lack thereof—of their discretionary authority to appoint neutral expert witnesses pursuant to FRE 706. Although FRE 706 permits the court to appoint an independent expert as a technical advisor or third-party witness,[62] judges are generally quite reluctant to do so.[63] While this

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testimony or opinion' in a bench trial." (quoting Shore v. Mohave Cty., Ariz., 644 F.2d 1320, 1322-23 (9th Cir. 1981)); ATA Airlines, Inc. v. Fed. Exp. Corp., 665 F.3d 882, 896 (7th Cir. 2011) ("The responsibility [to closely review scientific evidence under *Daubert*] is especially great in a jury trial, since jurors on average have an even lower comfort level with technical evidence than judges."); *Brown*, 415 F.3d at 1269 ("There is less need for the gatekeeper to keep the gate when the gatekeeper is keeping the gate only for himself.").

59. Traxys N. Am., LLC v. Concept Mining, Inc., No. 1:10CV00029, 2011 WL 1979385, at *1 (W.D. Va. 2011). Given that FRE 702 gatekeeping is intended to exclude only expert testimony that is not "scientifically valid," it is unclear what probative value such evidence might have. *Daubert*, 509 U.S. at 583.

60. *See supra* note 41 and accompanying text.

61. *See, e.g.*, Kansas City S. Ry. Co. v. Sny Island Levee Drainage Dist., 831 F.3d 892, 900 (7th Cir. 2016); Estate of Stuller v. United States, 811 F.3d 890, 895 n.3 (7th Cir. 2016); *In re* Flashcom, Inc., 647 Fed. App'x 689, 691 n.1 (9th Cir. 2016); *In re* Salem, 465 F.3d 767, 777 (7th Cir. 2006) (noting that if "the gatekeeper and the factfinder are one and the same… the need to make such decisions prior to hearing the testimony is lessened"); Jones v. United States, 127 F.3d 1154, 1156 (9th Cir. 1997).

62. FED. R. EVID. 706(b).

63. Although comprehensive statistics on the rate of appointment of independent experts under FRE 706 are difficult to obtain, the existing evidence indicates that such appointments are rare. *See* JOE S. CECIL & THOMAS E. WILLGING, FED. JUDICIAL CTR., COURT-APPOINTED EXPERTS: DEFINING THE ROLE OF EXPERTS APPOINTED UNDER FEDERAL RULE OF EVIDENCE 706, at 5 (1993) (judges view such appointments "as an extraordinary activity that is appropriate only in rare instances"); *see also* Shirley A. Dobbin et al., *Federal and State Trial Judges on the Proffer and Presentation of Expert Evidence*, 28 JUS. SYS. J. 1, 9 (2007) (26.2% of district court judges reported having appointed a FRE 706 expert while 73.9% reported that they would not do so). Studies of state court practices under state rules analogous to FRE 706 present a similar picture of judges' reticence to appoint independent experts. *See* Samuel R. Gross, *Expert Evidence*, 1991 WIS. L. REV. 1113, 1191 (1991) (examination of 529 California civil trials in which expert witnesses were involved found "not a single reference to a court-appointed expert"); Andrew W. Jurs, *Questions from the Bench and Independent Experts: A Study of the Practices of State Court Judges*, 74 U. PITT. L. REV. 47, 58 (2012) (22% of state court judges had appointed an independent expert under

reluctance is to some extent grounded in the Anglo-American culture of judicial passivity,[64] and to some extent in the logistical problems inherent in identifying and retaining experts on an ad hoc basis,[65] it also suggests a failure on judges' part to recognize the scope of their own ignorance in specialized expert domains and their need for independent advice in making credibility determinations between partisan experts.[66] This is epistemic exceptionalism of a passive rather than active sort—a failure on the part of judges to recognize the need for expert advice and insight on technical matters beyond the scope of most generalist judges' expertise.[67]

5. The Confrontation Clause.—Manifestations of epistemic exceptionalism are not limited to the FRE, but also include the Confrontation Clause of the Sixth Amendment. The rule announced in *Bruton v. United States* holds that, in a joint criminal trial, an out-of-court confession made by one co-defendant, admissible against her as an admission under FRE 801(d)(2)(A), is nevertheless rendered inadmissible by the Confrontation Clause where the confession implicates the co-defendant.[68] The Court's rationale in *Bruton* goes directly to the problem of cognitive limitations. Although evidence admissible against one defendant in a multi-defendant prosecution would ordinarily be admitted subject to a limiting instruction, the Court held that that solution is untenable in the case of incriminating admissions by co-defendants; it is simply not credible that the jury could disregard such incriminating evidence when evaluating the implicated co-defendant's guilt.[69]

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state equivalents of FRE 706).

64. Christopher Tarver Robertson, *Blind Expertise*, 85 N.Y.U. L. REV. 174, 178 (2010) ("Rule 706 has failed to change practice, since it pushes against deeply ingrained norms, roles, and incentive structures of the adversarial status quo."); CECIL & WILLGING, *supra* note 63, at 4-5 ("[M]uch of the uneasiness with court-appointed experts arises from the difficulty in accommodating such experts in a court system that values, and generally anticipates, adversarial presentation of evidence."); *cf.* Jurs, *supra* note 63, at 64 (77% of state court judges identified "concern about interference with the adversarial system" as a reason not to appoint independent experts under state equivalents of FRE 706).

65. *See, e.g.*, Robertson, *supra* note 64, at 200; Jurs, *supra* note 63, at 64 (31% of state court judges identified "lack of knowledge about the procedure" for appointment as a reason for not appointing independent experts, and approximately 15% wrote in concerns about the cost of the procedure).

66. For example, 58% of the state court judges in Jurs' study identified the "rarity of cases which make a Rule 706 expert necessary" as a reason for never having appointed an independent expert under state equivalents of FRE 706, and 53% believed that "party experts make Rule 706 experts unnecessary." Jurs, *supra* note 63, at 64.

67. *See* James R. Dillon, *Expertise on Trial*, 19 COLUM. SCI. & TECH. L. REV. 247 (2018) (discussing the problem of "epistemic competence" in courts' engagement with scientific expert testimony).

68. Bruton v. United States, 391 U.S. 123, 126 (1968); *see also* Gray v. Maryland, 523 U.S. 185 (1998); Richardson v. Marsh, 481 U.S. 200 (1987).

69. *See Bruton*, 391 U.S. at 126 ("[B]ecause of the substantial risk that the jury, despite

Bruton involved a jury trial, and the Court discussed the jury as the relevant factfinder. Subsequent appellate decisions have relied on this distinction to exclude bench trials from the scope of the *Bruton* rule and have done so explicitly on the basis of epistemic exceptionalism. In *United States v. Castro*, for example, the First Circuit held *Bruton* inapplicable in bench trials because although "[a] jury may have difficulty in disregarding extrajudicial statements implicating a defendant[, w]e will not presume that a judge suffers from the same disability. Indeed, the presumption is to the contrary."[70] This presumption is, to all appearances, irrebuttable; I am aware of no case in which a defendant has attempted to offer empirical evidence of judges' (or the particular judge's) ability, or lack thereof, to disregard the prejudicial effects of an inculpatory admission on the non-declarant co-defendant, nor does the line of cases excluding bench trials from the *Bruton* rule contain any indication that such evidence would be accepted.

B. Complexity Exceptions to the Seventh Amendment

In perhaps the purest expression of epistemic exceptionalism to be found in American law, several scholars and a few courts have recognized or spoken in support of a generalized "complexity" exception to the Seventh Amendment's right to jury trial in cases in which the evidence is too complex for a jury to comprehend. The Supreme Court appeared to endorse that general approach in *Ross v. Bernhard*, noting that the question whether a claim is a "legal" (as opposed to equitable) one to which the jury trial right applies is to be determined in part by "the practical abilities and limitations of juries."[71] The Third Circuit explicitly recognized a complexity exception in *In re Japanese Electronic Products Antitrust Litigation*, which held that "due process precludes trial by jury when a jury is unable to perform this task with a reasonable understanding of the evidence and the legal rules."[72] Implicit in this holding, of course, is the premise

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instructions to the contrary, looked to the incriminating extrajudicial statements in determining petitioner's guilt, admission of Evans' confession in this joint trial violated petitioner's right of cross-examination secured by the Confrontation Clause of the Sixth Amendment.")

70. United States v. Castro, 413 F.2d 891, 895 n.7 (1st Cir. 1969); *see also* Johnson v. Tennis, 549 F.3d 296, 298 (3d Cir. 2008); United States v. Cardenas, 9 F.3d 1139, 1154-55 (5th Cir. 1993); Rogers v. McMackin, 884 F.2d 252, 255-257 (6th Cir. 1989); United States ex rel. Faulisi v. Pinkney, 611 F.2d 176, 178 (7th Cir. 1979); Cockrell v. Oberhauser, 413 F.2d 256, 257-58 (9th Cir. 1969).

71. Ross v. Bernhard, 396 U.S. 531, 538 n.10 (1970). The Court later clarified that the language in *Ross* went to the permissibility of delegation of claims to "an administrative agency or specialized court of equity." Granfinanciera, S.A. v. Nordberg, 492 U.S. 33, 42 n.4 (1989). Whether *Granfinanciera* is properly read as foreclosing the general complexity exception adopted by *Japanese Electronic Products* is an open question, though the Court did not consider *Granfinanciera* an impediment to the patent-specific complexity exception in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

72. *In re* Japanese Elec. Prods. Antitrust Litig., 631 F.2d 1069, 1090; *see also* Contini v.

that generalist judges *can* arrive at a reasonable understanding of the evidence even where juries cannot.[73]

Although popular with scholars,[74] the general complexity exception recognized in *Japanese Electronic Products* has not been adopted by any other circuit court, and I am aware of no subsequent case within the Third Circuit clearly holding that a case falls within the exception.[75] A more successful, albeit narrower, complexity exception is the exclusion of juries from the claim construction phase of patent litigation. In *Markman v. Westview Instruments, Inc.*, the Supreme Court held that the Seventh Amendment, which guarantees a jury trial in patent infringement cases, does not commit to the jury the construction of claim terms.[76] The Court drew that distinction partly on the basis of historical

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Hyundai Motor Co., 149 F.R.D. 41, 42 n.2 (S.D.N.Y. 1993) (noting that *Japanese Electronic Products*, "although infrequently followed subsequently, ha[s] never been overturned or overruled").

73. *See* ROBERT MACCOUN, GETTING INSIDE THE BLACK BOX: TOWARD A BETTER UNDERSTANDING OF CIVIL JURY BEHAVIOR 27-28 (1987); *cf.* Larry Heuer & Steven Penrod, *Trial Complexity: A Field Investigation of Its Meaning and Effects*, 18 LAW & HUM. BEHAV. 29, 48 (1994). We need not question that judges' *legal* expertise would enable them to understand legal rules too complex for lay jurors to understand, though we may query whether such rules exist. The Third Circuit's formulation distinguishes between legal and factual complexity—arguably independent bases for complexity exceptions. *See* MACCOUN, *supra*, at 27-28; *cf.* Heuer & Penrod, *supra*, at 48 (concluding after empirical study that "judges see complexity resulting from complicated evidence, complicated legal issues, and of information").

74. *See, e.g.*, Scott Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L.J. 1535, 1672-77 (1998); James S. Campbell, *The Current Understanding of the Seventh Amendment: Jury Trials in Modern Complex Litigation*, 66 WASH. U. L.Q. 63, 68-70 (1988); James S. Campbell & Nicholas Le Poidevin, *Complex Cases and Jury Trials: A Reply to Professor Arnold*, 128 U. PA. L. REV. 965 (1980); Joseph A. Miron, Jr., *The Constitutionality of a Complexity Exception to the Seventh Amendment*, 73 CHI.-KENT L. REV. 865 (1998). *But see* Morris S. Arnold, *Historical Inquiry into the Right to Trial by Jury in Complex Civil Litigation*, 128 U. PA. L. REV. 829 (1980) (arguing that no historical precedent for complexity exception exists); Richard C. Waites & David A. Giles, *Are Jurors Equipped to Decide the Outcome of Complex Cases?*, 29 AM. J. TRIAL ADVOC. 19, 26-28 (2005) (arguing against complexity exception).

75. *See* SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1130 (Fed. Cir. 1985) (rejecting complexity exception); *In re* U.S. Fin. Sec. Litig., 609 F.2d 411, 432 (9th Cir. 1979) (same); Soderbeck v. Burnett Co., 752 F.2d 285, 289 (7th Cir. 1985) ("tak[ing] no position" on the complexity exception); Pinemont Bank v. Belk, 722 F.2d 232, 238 (5th Cir. 1984) (same); City of New York v. Pullman Inc., 662 F.2d 910, 919 (2d Cir. 1981) (same); *cf.* Phillips v. Kaplus, 764 F.2d 807, 814 (11th Cir. 1985) (declining to adopt the complexity exception, but noting that the exception is "consistent" with the Supreme Court's suggestion in *Ross* that the "abilities and limitations of the jury" are relevant to the Seventh Amendment analysis).

76. *Markman*, 517 U.S. at 376 (1996). Thus, the construction of patents is distinct from that of contracts, which are to be interpreted judicially where the document can be construed on the basis of the text alone, but questions of interpretation involving extrinsic evidence of intent or understanding are committed to the jury. *See, e.g.*, City of Hope Nat'l Med. Ctr. v. Genentech, Inc.

practice,[77] but the decision is also replete with the language of epistemic exceptionalism. Although claim construction involves making credibility determinations between opposed expert witnesses, *Markman* held that "judges, not juries, are the better suited to find the acquired meaning of patent terms."[78] This is because "[t]he judge, from his training and discipline, is more likely to give a proper interpretation to [patent claims] than a jury; and he is, therefore, more likely to be right, in performing such a duty, than a jury can be expected to be."[79] The jury's core competencies to "evaluate demeanor" or "reflect community standards," the Court held, "are much less significant [in the claim construction context] than a trained ability to evaluate the testimony in relation to the overall structure of the patent."[80]

III. ARE JUDGES EPISTEMICALLY EXCEPTIONAL?

Part II discussed several doctrines in the law of evidence and civil procedure in which manifestations of epistemic exceptionalism have established double standards between judge and jury factfinders. That Part was primarily descriptive, explaining the scope and rationale of these doctrines while minimizing discussion of the extent to which the claims of epistemic exceptionalism are empirically warranted. In this Part, I will examine the empirical literature pertinent to the assumptions of epistemic exceptionalism.

The doctrines of epistemic exceptionalism are, of course, perfectly defensible if judges are in fact epistemically exceptional. And there is some reason, even beyond courts' reassurances, to think that this might be so. Judges have ascended to prestigious heights in the competitive field of legal practice. They are more highly educated and more successful in their careers than the average person, and we may stipulate for the sake of discussion that they possess an average general intelligence above that of the general population. Moreover, they are professionally acculturated with norms of neutrality and objectivity.[81] Some judges vigorously deny that ideology or political preference plays any role in their decision-making,[82] and we need not doubt their word insofar as their descriptions

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43 Cal. 4th 375, 395 (2008). Claim construction routinely involves the consideration of extrinsic expert testimony concerning the meaning of the patent's terms. *See Markman*, 517 U.S. at 386-87.

77. *Markman*, 517 U.S. at 378-83.

78. *Id.* at 388.

79. *Id.* at 388-89 (quoting Parker v. Hulme, 18 F. Cas. 1138, 1140 (C.C.E.D. Pa. 1849)).

80. *Id.* at 389-90.

81. *See, e.g.*, MODEL CODE OF JUDICIAL CONDUCT Canon 3(A)(1) (2014) ("A judge should be faithful to, and maintain professional competence in, the law and should not be swayed by partisan interests, public clamor, or fear of criticism."); *id.* at Canon 3(C)(1) ("A judge shall disqualify himself or herself in a proceeding in which the judge's impartiality might reasonably be questioned, including but not limited to instances in which the judge has a personal bias or prejudice concerning a party, or personal knowledge of disputed evidentiary facts concerning the proceeding.").

82. *See, e.g.*, Harry T. Edwards, *The Effects of Collegiality on Judicial Decision Making*, 151

extend to conscious processes.[83] Nevertheless, the empirical evidence indicates that judges' cognitive processes are at best only slightly and inconsistently exceptional, and insufficiently so to support the grandiose claims of epistemic exceptionalism.[84] Judges may be less susceptible to some, but not all, forms of cognitive error than lay jurors, and they gain some benefit from judicial experience and training, but the differences are inadequate to warrant wholesale exemptions from evidentiary guidelines intended to constrain cognitive error.[85] Moreover, there is no reason to believe that judges are categorically better than jurors at engaging with complex evidence that lies beyond the scope of their own expertise in the domain of law.[86] Judges' expertise in law does not extend to the scientific and technical domains in which expert witnesses testify, and general intelligence provides no protection against some forms of cognitive bias, particularly those associated with motivated cognition; in fact, it has been shown to exacerbate the problem.[87]

A. Cognitive Exceptionality

The processes of human belief formation, risk assessment, and decision-making bear little resemblance to the sterile rationalism of *homo economicus*.[88] Human cognition occurs under conditions of imperfect information and scarcity of processing time; it therefore evolved not to maximize truth-seeking above all, but rather to evaluate information according to heuristics that tend, on average, to promote survival and reproduction. Some cognitive errors are predictable from this fact alone—for example the tendency to project "agenticity" onto natural phenomena or to find patterns in meaningless data is readily explicable by the fact

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U. PA. L. REV. 1639 (2003): Harry T. Edwards & Michael A. Livermore, *Pitfalls of Empirical Studies that Attempt to Understand the Factors Affecting Appellate Decisionmaking*, 58 DUKE L.J. 1895 (2009).

83. Unconscious processes are another matter. *See* Avani Mehta Sood, *Motivated Cognition in Legal Judgments—An Analytic Review*, 9 ANN. REV. L. & SOC. SCI. 307, 309 (2013) [hereinafter Sood, *Motivated Cognition*] ("The word motivated may seem to imply a conscious process, but motivated cognition operates under an 'illusion of objectivity,' which protects the integrity of decision makers in their own eyes and in the eyes of others."); Chris Guthrie et al., *Inside the Judicial Mind*, 86 CORNELL L. REV. 777, 780 (2001) ("[W]holly apart from political orientation and self-interest, the very nature of human thought can induce judges to make consistent and predictable mistakes in particular situations.").

84. *Cf.* Schauer, *supra* note 10, at 187 (arguing that "judges are often afflicted with the kinds of cognitive failings that juries are, and that many of the same reasons exist for imposing second-order exclusionary (or other) rules on juries' first-order epistemological assessments also apply [to judges]").

85. *See* Sood, *Motivated Cognition*, *supra* note 83, at 318-20.

86. *See* Schauer, *supra* note 10, at 185-86.

87. *Id*. at 189-90.

88. *See* RICHARD H. THALER, MISBEHAVING: THE MAKING OF BEHAVIORAL ECONOMICS 4-9 (2015).

that, in the evolutionary environment, a false ascription of agency to, e.g., a perceived movement or passing shadow (a "false positive" or "Type I error") carried little cost, whereas a false *rejection* of agenticity (a "false negative" or "Type II error") carried a substantial risk of death by predator.[89] Thus, cognitive heuristics may be both adaptive and non-veridical;[90] we tend to see more hidden predators than are actually there, and more broadly, we tend to find patterns and causality where none exist. Sometimes the results are mostly harmless, as when the Virgin Mary is seen on a grilled cheese sandwich;[91] other times they are potentially deadly, as when Edgar Welch strode armed into a Washington, D.C., pizzeria, having been convinced by online conspiracy theories that it was the center of a pedophilia ring with which Hillary Clinton and other high-profile affiliates of the Democratic Party were involved.[92]

Spurious ascription of agenticity is but one of many truth-divergent tendencies to which human cognition is susceptible. While a necessarily brief survey can barely scratch the surface of the complex model of human cognition established by cognitive psychology and related fields, it can at least help to establish a baseline against which to measure judicial epistemic exceptionalism.[93] Among others, human cognition is susceptible to the effects of *anchoring* and *framing*, both of which describe effects whereby the outcome of a decision-making process is affected by arbitrary differences in its initial presentation.[94] Our

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89. *See* Michael Shermer, *Agenticity*, 300 SCI. AM. 36, 36 (2009).

90. *Cf.* Justin T. Mark et al., *Natural Selection and Veridical Perceptions*, 266 J. THEORETICAL BIOLOGY 504 (2010) (applying game-theoretic evolutionary simulations to conclude that the natural selection of perceptual apparatus may drive perceptual veridicality to extinction).

91. *See "Virgin Mary" Toast Fetches $28,000*, BBC NEWS (Nov. 23, 2004, 11:54 AM), http://news.bbc.co.uk/2/hi/4034787.stm [https://perma.cc/2TFQ-UNRS]; *cf.* Jiangang Liu et al., *Seeing Jesus in Toast: Neural and Behavioral Correlates of Face Pareidolia*, 53 CORTEX 60 (2014).

92. *See* Matthew Haag & Maya Salam, *Man Gets 4 Years in Prison For 'Pizzagate' Shooting*, N.Y. TIMES, June 23, 2017, at A14.

93. I do not claim that a one-to-one relationship exists between the rules described in Part II and the cognitive effects surveyed in this paragraph. The common law of evidence on which many of the FRE are based predates the findings of modern psychology by decades, if not centuries. I do, however, maintain that the FRE are intended, however imperfectly, to guard against the *types* of cognitive effects that psychology has described. *See* MICHAEL J. SAKS & BARBARA A. SPELLMAN, THE PSYCHOLOGICAL FOUNDATIONS OF EVIDENCE LAW 7 (2016) ("In concluding that a gap [between optimal decision making and human cognitive processes] exists, rule makers share the company of psychologists who have found whole classes of erroneous inferences and judgments that humans routinely make.").

94. Anchoring describes the influence that the starting point for a numerical estimation—for example, the list price of a house or the plaintiff's demand in a lawsuit—exerts on the ultimate estimate. Guthrie et al., *supra* note 83, at 787-89 & n.61 (citing five studies finding anchoring effects in mock jurors' assessment of damages). *See generally* Mark W. Bennett, *Confronting Cognitive "Anchoring Effect" and "Blind Spot" Biases in Federal Sentencing: A Modest Solution for Reforming a Fundamental Flaw*, 104 J. CRIM. L. & CRIMINOLOGY 489 (2014); Shari Seidman

evaluations of risk are susceptible to the *hindsight bias*, in which our estimate of the ex ante probability or foreseeability of a bad outcome is disproportionately affected by our ex post knowledge of its occurrence.[95] We tend to over-value our contributions to collective achievements,[96] and overestimate our competence, intelligence, and morality in comparison to others.[97] Indeed, the *least* skilled at a particular task are often the most prone to such overestimation.[98] Hume's maxim notwithstanding,[99] we routinely fail to distinguish "ought" from "is"—our

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Diamond et al., *Damage Anchors on Real Juries*, 8 J. EMPIRICAL LEGAL STUD. 148, 150 (2011) (finding limited anchoring effect of attorney damage demands on jury deliberations, but also noting that jurors are "juries are critical consumers of the demands the attorneys make and heavily discount them"); Timothy D. Wilson et al., *A New Look at Anchoring Effects: Basic Anchoring and its Antecedents*, 125 J. EXPERIMENTAL PSYCHOL. 387 (1996). Framing refers to the effects on risk assessment of the presentation of economically equivalent gains or losses vis-à-vis some reference point. Guthrie et al., *supra* note 83, at 794 ("People tend to make risk-averse decisions when choosing between options that appear to represent gains and risk-seeking decisions when choosing among options that appear to represent losses."); Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 SCI. 453 (1981).

95. *See* Jay J.J. Christensen-Szalanski & Cynthia Fobian Willham, *The Hindsight Bias: A Meta-Analysis*, 48 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 147 (1991); Scott A. Hawkins & Reid Hastie, *Hindsight: Biased Judgments of Past Events After the Outcomes are Known*, 107 PSYCHOL. BULL. 311 (1990); Guthrie et al., *supra* note 83, at 799-801; *cf.* Maggie Wittlin, *Hindsight Evidence*, 116 COLUM. L. REV. 1323 (2016) (arguing that hindsight evidence is probative under some circumstances and that the effects of hindsight bias can be mitigated).

96. Guthrie et al., *supra* note 83, at 811-15 (discussing egocentric biases).

97. *See, e.g.*, Nicholas Epley & David Dunning, *Feeling "Holier than Thou": Are Self-Serving Assessments Produced by Errors in Self- or Social Prediction?*, 79 J. PERSONALITY & SOC. PSYCHOL. 861 (2000) (surveying literature finding that individuals tend to overestimate their morally praiseworthy traits relative to others); Leilani Greening & Carla C. Chandler, *Why It Can't Happen to Me: The Base Rate Matters, But Overestimating Skill Leads to Underestimating Risk*, 27 J. APPLIED SOC. PSYCHOL. 760 (1997) (study participants overestimated their own skill relative to others); Anna Sundström, *Self-Assessment of Driving Skill-A Review from a Measurement Perspective*, 11 TRANSP. RES. PART F 1 (2008) (reviewing studies showing that majorities of respondents rate themselves above average in driving skill and safety).

Andrew Jurs' survey of jurors in cases involving expert witnesses found an apparent manifestation of the egocentric bias of particular relevance to our discussion: 97% of Jurs's respondents believed that they personally had understood the expert testimony in their case, but only 69% believed that juries in general understood experts. Jurs, *supra* note 63, at 372.

98. David Dunning, *The Dunning-Kruger Effect: On Being Ignorant of One's Own Ignorance*, *in* 44 ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY 247 (James M. Olson and Mark P. Zanna eds., 2011); Justin Kruger & David Dunning, *Unskilled and Unaware of It: How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments*, 77 J. PERSONALITY & SOC. PSYCHOL. 1121 (1999). The "Dunning-Kruger Effect" refers to the prediction that "those who are incompetent" in a field "should have little insight into their incompetence." Dunning, *supra*, at 260.

99. DAVID HUME, A TREATISE OF HUMAN NATURE Book III, Pt. I, § 1 (1739) (cautioning

empirical beliefs and risk assessments are often motivated by our political or personal preferences,[100] by other forms of ingroup identity,[101] and by the effects of cultural cognition, whereby we tend to underestimate the risks associated with activities we deem socially beneficial, and to exaggerate the risks associated with activities we deem socially harmful.[102] Our beliefs tend to follow "identity-protective" patterns, whereby the profession of empirical beliefs—concerning, for example, the reality of anthropogenic climate change, the safety and efficacy of vaccination, or principle of biological evolution via natural selection—comes to comprise an element of an individual's self-perception and ingroup status.[103]

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against the "imperceptible" change in normative argumentation from "is, and is not" to "ought, or ought not").

100. "The . . . psychological theory of motivated reasoning holds that when decision makers have a preference regarding the outcome of an evaluative task, they are more likely to arrive at that desired conclusion by engaging in inadvertently biased processes for 'accessing, constructing, and evaluating beliefs.'" Sood, *Motivated Cognition*, *supra* note 83, at 309 (quoting Ziva Kunda, *The Case for Motivated Reasoning*, 108 PSYCHOL. BULL. 480, 480 (1990)); *cf.* Avani Mehta Sood, *Applying Empirical Psychology to Inform Courtroom Adjudication—Potential Contributions and Challenges*, 130 HARV. L. REV. F. 301, 303 (2017) [hereinafter Sood, *Applying Empirical Psychology*] (defining motivated cognition as "a human tendency to reason toward preferred outcomes by perceiving, interpreting, or evaluating information in a biased manner, without realizing one is doing so").

101. *See, e.g.*, Anca M. Miron et al., *Motivated Shifting of Justice Standards*, 36 J. PERSONALITY & SOC. PSYCHOL. BULL. 768 (2010) (finding that individuals apply higher standards of proof to claims of injustice perpetrated by ingroup with which they identify). In the seminal study on this topic, students at Dartmouth and Princeton perceived the events of a contested football game differently based on their ingroup allegiances. *See* Albert H. Hastorf & Hadley Cantril, *They Saw a Game: A Case Study*, 49 J. ABNORMAL & SOC. PSYCHOL. 129 (1954).

102. *See, e.g.*, Dan M. Kahan et al., *Cultural Cognition of Scientific Consensus*, 14 J. RISK RES. 147, 166-69 (2011) ("Individuals systematically overestimate the degree of scientific support for positions they are culturally predisposed to accept as a result of a cultural availability effect that influences how readily they can recall instances of expert endorsement of those positions."); Dan M. Kahan et al., *Culture and Identity-Protective Cognition: Explaining the White-Male Effect in Risk Perception*, 4 J. EMPIRICAL LEGAL STUD. 465, 491 (2007) (finding that demographic differences in risk perception "could be explained as a form of motivated cognition aimed at protecting identities individuals form through their commitment to cultural norm").

In an interesting experiment demonstrating motivated cognition in a legal context, Sood showed that laypersons were more likely to find the discovery of tainted evidence "inevitable" and the overreaching police less morally culpable when the evidence pertained to the sale of heroin, as opposed to marijuana. Avani Metha Sood, *Cognitive Cleansing: Experimental Psychology and the Exclusionary Rule*, 103 GEO. L.J. 1543 (2014). Sood explained that "[t]he difference in suppression outcomes between the two cases appeared to be mediated by the decision makers' perceptions of the defendant as more immoral and deserving of punishment in the heroin condition than in the marijuana condition." Sood, *Applying Empirical Psychology*, *supra* note 100, at 304.

103. Robert Jervis, *Understanding Beliefs*, 27 POL. PSYCHOL. 641 (2006); *see also* Per Espen Stoknes, *Rethinking Climate Communications and the "Psychological Climate Paradox,"* 1

Kahan et al. explain the phenomenon as follows:

> Individual well-being, material and emotional, is bound up with membership in various self-defining groups. Rejecting factual beliefs widespread within such a group can undermine individual well-being, either by threatening to estrange a person from his peers or by forcing that person to contemplate the social incompetence of those he identifies with. As a means of psychological self-defense, then, people tend to process information in a selective fashion that bolsters beliefs dominant within their self-defining groups.[104]

Cognitive tribalism manifests in other ways as well; even individuals who consciously attempt to excise negative racial, gendered, and other stereotypes from their cognitive processes may be susceptible to *implicit bias*—negative judgments grounded in those stereotypes of which we are consciously unaware.[105]

Against this brief sketch of the human cognitive condition, we can now evaluate an essential claim of epistemic exceptionalism: That judges' cognitive processes are resistant to the truth-divergent effects to which human cognition is generally susceptible to a greater degree than are the general public's. If so, then the double standards of epistemic exceptionalism might be justified. A review of the available evidence on judicial cognition, however, demonstrates that judges' claims of epistemic exceptionalism are, at best, significantly exaggerated. Judges,

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ENERGY RES. & SOC. SCI. 161, 165 (2014) (surveying the effects of personal identity on interpretation of information about climate change).

104. Dan M. Kahan et al., *Whose Eyes Are You Going to Believe? Scott v. Harris and the Perils of Cognitive Illiberalism*, 122 HARV. L. REV. 837, 852 (2009); *see also* Dan M. Kahan et al., *Motivated Numeracy and Enlightened Self-Government*, 1 BEHAV. PUB. POL'Y 54, 56-57 (2017) ("[I]dentity-protective cognition can be viewed as psychic self-defense mechanism that steers individuals away from beliefs that could alienate them from others on whose support they depend in myriad domains of everyday life.").

105. *See* Justin D. Levinson et al., *Implicit Racial Bias: A Social Science Overview*, *in* IMPLICIT RACIAL BIAS ACROSS THE LAW 9 (Justin D. Levinson & Robert J. Smith eds., 2012); Anthony Greenwald & Linda Hamilton Krieger, *Implicit Bias: Scientific Foundations*, 94 CALIF. L. REV. (2006). *See generally* SHANKAR VEDANTAM, THE HIDDEN BRAIN: HOW OUR UNCONSCIOUS MINDS ELECT PRESIDENTS, CONTROL MARKETS, WAGE WARS, AND SAVE OUR LIVES (2010); Anthony G. Greenwald et al., *Measuring Individual Differences in Implicit Cognition: The Implicit Association Test*, 74 J. PERSONALITY & SOC. PSYCHOL. 1464 (1998) (introducing the Implicit Association Test ("IAT") as a measure of implicit bias). Other psychologists, however, have questioned the IAT's usefulness as a measure of implicit bias, pointing out, for example, the relative inconsistency of individuals' IAT scores across multiple tests and the test's lack of correlation to external manifestations of bias. *See, e.g.*, Frederick L. Oswald et al., *Predicting Ethnic and Racial Discrimination: A Meta-Analysis of IAT Criterion Studies*, 105 J. PERSONALITY & SOC. PSYCHOL. 171 (2013); *see also* Jesse Singal, *Psychology's Favorite Tool for Measuring Racism Isn't Up to the Job*, CUT (Jan. 11, 2017, 12:18 PM), https://www.thecut.com/2017/01/psychologys-racism-measuring-tool-isnt-up-to-the-job.html [https://perma.cc/V28M-S3WA] (surveying methodological critiques of the IAT).

like laypersons,[106] "are predominantly intuitive decision makers, and intuitive judgments are often flawed."[107]

The empirical literature on judicial susceptibility to cognitive biases shows that judges' training and experience leave them better prepared to resist some forms of cognitive error, but on the whole, does not diverge from the cognitive processes of laypersons to a degree sufficient to warrant the sweeping claims of epistemic exceptionalism.[108] In a leading article, Guthrie, Rachlinski, and Wistrich evaluated a sample of 167 federal magistrate judges' susceptibility to five "cognitive illusions:" anchoring, framing, hindsight bias, the representative heuristic, and egocentric biases.[109] They found that judges "appear to be just as susceptible as other decision makers to three of the cognitive illusions we tested: anchoring, hindsight bias, and egocentric bias."[110] Consistently with other studies,[111] judges showed susceptibility to anchoring effects comparable to that

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106. *See generally* DANIEL KAHNEMAN, THINKING, FAST AND SLOW (2011); Michael J. Saks & Robert F. Kidd, *Human Information Processing and Adjudication: Trial by Heuristics*, 15 LAW & SOC'Y REV. 123 (1980) (describing heuristic decision making in laypersons and judges).

107. Chris Guthrie et al., *Blinking on the Bench: How Judges Decide Cases*, 93 CORNELL L. REV. 1, 5 (2007) (sample of state court judges "performed comparably to other well-educated adults" on test of intuitive decision making); *see also* SAKS & SPELLMAN, *supra* note 93, at 204-05 (discussing examples of intuitive judicial factfinding); Saks & Kidd, *supra* note 106 (describing heuristic decision making in laypersons and judges).

108. Much of the cognitive research on judges has been performed by Jeffrey Rachlinski, Chris Guthrie, and Andrew Wistrich. Some scholars have suggested that the authors' prominence in the field may call into question the validity of their later results, insofar as judges' responses may be affected by their awareness of the authors' work. *See* Bernard Chao et al., *Why Courts Fail to Protect Privacy: Race, Age, Bias, and Technology*, 106 CALIF. L. REV. 263, 286 (2018). This is a valid concern, and more broadly, we should bear in mind that far fewer studies on judicial samples exist than studies of the general population. Nevertheless, these studies, by the Rachlinski group and others, represent the current state of knowledge about judicial cognition; while knowledge generated by empirical methods is in all cases subject to revision in light of further evidence, we are justified in relying on the current state of the empirical evidence in examining policy and legal doctrine. In any event, to the extent that the weight of the empirical evidence favors the null hypothesis that no (or, at least, few) significant differences between judicial and lay cognition exist, proponents of epistemic exceptionalism fail to meet their burden of persuasion.

109. The *representativeness heuristic* refers to the tendency to evaluate the probability that an object or effect is a member of a broader class on the basis of the extent to which the individual object resembles the class. Guthrie et al., *supra* note 83, at 805-11; Tversky & Kahneman, *supra* note 94, at 1124-27. As this heuristic has special bearing on the interpretation of statistical evidence, I will discuss it at greater length in Part III.B, *infra*.

110. Guthrie et al., *supra* note 83, at 816.

111. The susceptibility of judges to anchoring effects is well established in the literature on sentencing. *See, e.g.*, Birte Englich et al., *Playing Dice with Criminal Sentences: The Influence of Irrelevant Anchors on Experts' Judicial Decision Making*, 32 PERSONALITY & SOC. PSYCHOL. BULL. 188 (2006); Birte Englich & Thomas Mussweiler, *Sentencing Under Uncertainty: Anchoring Effects in the Courtroom*, 31 J. APPLIED SOC. PSYCHOL. 1535 (2001); Jeffrey J. Rachlinski et al.,

of laypersons.[112] The authors asked judges to estimate damages in a personal injury case, in which half the respondents' materials contained no numerical anchor and the other half included an intentionally low anchor.[113] The low anchor affected the judges' estimates; the average award among judges receiving the low anchor was 29.4% lower than the average among judges receiving no anchor.[114] The degree of judicial susceptibility to hindsight bias is also similar to that shown by mock jurors in other studies.[115] Guthrie et al. presented judges with a hypothetical case involving the imposition of Rule 11 sanctions that included three variations of the outcome of an appeal—judges were randomly assigned materials in which the appellate court imposed a lesser sanction, affirmed the trial court's decision in its entirety, or vacated the decision.[116] They were then asked which of the three outcomes was most likely ex ante. If the judges' probability estimates were not affected by hindsight bias, we would not expect significant differences in their predictions; in fact, each group of judges was significantly more likely to rate the outcome that the judges were told *had* happened as the most likely.[117] Finally, the judges tended to show egocentric bias at rates equivalent to other groups.[118] Asked to rate themselves in comparison to the other

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Can Judges Make Reliable Numeric Judgments: Distorted Damages and Skewed Sentences, 90 IND. L.J. 695 (2015); Bennett, *supra* note 94; *see also* James R. Dillon, *Doubting* Demaree*: The Application of Ex Post Facto Principles to the United States Sentencing Guidelines after* U.S. v. Booker, 110 W. VA. L. REV. 1033, 1089 (2007) (discussing anchoring as a possible explanation for judges' continued adherence to the United States Sentencing Guidelines after the Supreme Court's decision in *United States v. Booker*, 543 U.S. 220 (2005)).

112. Guthrie et al., *supra* note 83, at 816-17.

113. *Id*. at 790-91.

114. *Id*. at 791-92.

115. *Id*. at 817-18 & n.198 (citing study of hindsight bias in mock jurors); *see also* Jonathan D. Casper et al., *Juror Decision Making, Attitudes, and the Hindsight Bias*, 13 LAW & HUM. BEHAV. 291 (1989) (mock jurors were less likely to find civil rights violations when told that the search produced evidence of criminal conduct).

116. Guthrie et al., *supra* note 83 at 802.

117. *Id.* at 802-03; *see also* John C. Anderson et al., *Evaluation of Auditor Decisions: Hindsight Bias Effects and the Expectation Gap*, 14 ECON. PSYCHOL. 711, 725-27 (1993) (finding hindsight bias effects in a sample of 65 state and federal judges); Chris Guthrie et al., *The "Hidden Judiciary": An Empirical Examination of Executive Branch Justice*, 58 DUKE L. J. 1477, 1512-16 (2009) (administrative law judges' decisions affected by hindsight bias). On the other hand, Viscusi finds that judges' ex post risk assessments, although affected by hindsight bias, were less affected than those of jurors. W. Kip Viscusi, *How Do Judges Think About Risk?*, 1 AM. L. & ECON. REV. 26, 50-52, 59 (1999).

118. Guthrie et al., *supra* note 83, at 817-18 & nn. 203-04 (citing studies of egocentric biases in non-judicial samples); *see also* Theodore Eisenberg, *Differing Perceptions of Attorney Fees in Bankruptcy Cases*, 72 WASH. U. L. Q. 979, 983-87 (1994) (bankruptcy judges overestimated their own efficiency and performance in comparison to the estimates of lawyers appearing before them). *But see* Guthrie et al., *supra* note 107, at 28 (finding that judges "have the capacity" to resist hindsight bias where their decisions are constrained by a "web of rules").

judges in the room in terms of the rate at which their decisions had been overturned on appeal, 56.1% of the respondents rated themselves in the lowest quartile (that is, the least overturned), while only 4.5% ranked themselves in the highest.[119]

As to the effects of framing, judges showed a clear susceptibility to the effect, albeit at a somewhat diminished level as compared to studies of other groups.[120] The authors presented judges with a hypothetical copyright dispute; half of the judges were then presented with economically equivalent settlement offers from the plaintiff's and defendant's perspectives, respectively, and asked whether the party should accept the offer.[121] Although the offers were identical relative to the expected value of litigation, a statistically significantly greater number of judges—39.8% vs. 25%, respectively—responded that the plaintiff should accept the settlement offer.[122] Although the judges showed susceptibility to framing effects, the 15-point magnitude of the effect in this study was lower than that found in most studies on student samples, which have reported differences ranging from fourteen to fifty-one percentage points.[123]

Judges are also susceptible to the effects of motivated cognition, but it appears that their legal training and experience gives them substantial resistance to those effects when performing interpretive tasks within the domain of their legal expertise.[124] This was the conclusion of Kahan et al., whose recent experimental study of 253 sitting judges against a control group of 800 members of the general public found that judges' legal expertise imbues them with a "situation sense" that enables judges of diverse cultural identities to converge on "correct" answers to statutory interpretation questions that trigger polarization along identity-protective lines in the public.[125] Kahan et al.'s results are compatible with those of Redding and Reppucci, who examined whether the judgments of law students and state court judges concerning the legal relevance, admissibility, and weight of social science evidence in death penalty cases was

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119. Guthrie et al., *supra* note 83, at 813-14.

120. *Id*. at 816-17 (citing study of framing effects in law student sample).

121. *Id*. at 796-97.

122. *Id*. at 797.

123. *Id.* at 816-17; *accord* Russell Korobkin & Chris Guthrie, *Psychology, Economics, and Settlement: A New Look at the Role of the Lawyer*, 76 TEX. L. REV. 77, 99-100 (1997) (lawyers less susceptible to framing effects than laypersons).

124. As Sood notes, the "cognitive landscape" comparing judges' and laypersons' susceptibility to motivated cognition is "complex." Sood, *Applying Empirical Psychology*, *supra* note 100, at 310. Indeed, some evidence suggests that law students may be *more* prone to motivated cognition than the typical layperson. Eileen Braman & Thomas E. Nelson, *Mechanism of Motivated Reasoning? Analogical Perception in Discrimination Disputes*, 51 AM. J. POL. SCI. 940, 952 (2007). Other studies place law students in between the general public and professional lawyers and judges in their susceptibility to identity protective cognition in legal interpretation. Dan M. Kahan et al., *Ideology or Situation Sense: An Experimental Investigation of Motivated Reasoning and Professional Judgment*, 164 U. PA. L. REV. 349, 412-14 (2016).

125. Kahan et al*., supra* note 124, at 411-12.

affected by the respondents' normative views on the death penalty.[126] They found that law students tended to favor evidence that supported their normative views in all three judgments.[127] Judges, on the other hand, did not exhibit motivated reasoning with respect to the questions of legal relevance and admissibility, but they did display motivation effects concerning the "critically important" question of the weight accorded to the evidence.[128] Similarly, the available evidence suggests that judges are susceptible to the effects of implicit bias against a variety of outgroup characteristics.[129] Notwithstanding the traditional depiction of Justice as blindfolded and thus inattentive to extralegal characteristics, studies have found judicial decision-making to be sensitive to such factors as a litigant's out-of-state residence,[130] race,[131] gender,[132] and other legally irrelevant factors.[133]

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126. Richard E. Redding & N. Dickon Reppucci, *Effects of Lawyers' Socio-Political Attitudes on Their Judgments of Social Science in Legal Decision Making*, 23 LAW & HUM. BEHAV. 31 (1999).

127. *Id*. at 48.

128. *Id*.; *see also* Joshua R. Furgeson et al., *Do a Law's Policy Implications Affect Beliefs About Its Constitutionality? An Experimental Test*, 32 LAW & HUM. BEHAV. 219 (2008) (finding law students' political views affected their legal analysis of a hypothetical statute's constitutionality).

129. Furgeson et al*., supra* note 128, at 220.

130. Rachlinski et al., *supra* note 111, (judges responding to hypothetical cases imposed greater punitive damages against out-of-state defendants).

131. David S. Abrams et al., *Do Judges Vary in Their Treatment of Race?*, 41 J. LEGAL STUD. 347 (2012); Jerry Kang & Kristin Lane, *Seeing Through Colorblindness: Implicit Bias and the Law*, 58 UCLA L. REV. 465 (2010); Jeffrey J. Rachlinski et al., *Does Unconscious Racial Bias Affect Trial Judges?*, 84 NOTRE DAME L. REV. 1195 (2009) (judges harbor implicit racial biases and these affect judicial decision making, but "given sufficient motivation," judges can compensate for these effects); *see also* Jeffrey J. Rachlinski & Andrew J. Wistrich, *Judging the Judiciary by the Numbers: Empirical Research on Judges*, 13 ANN. REV. L. & SOC. SCI. 203, 221-22 (2017) (surveying literature on implicit racial bias in the judiciary).

132. *See generally* Cassia Spohn, *The Effects of the Offender's Race, Ethnicity, and Sex on Federal Sentencing Outcomes in the Guidelines Era*, 76 LAW & CONTEMP. PROBS. 75 (2013) (finding gender-based disparities in sentencing outcomes after controlling for differences in offender backgrounds); Sonja B. Starr, *Estimating Gender Disparities in Federal Criminal Cases*, 17 AM. L. & ECON. REV. 127 (2015) (same); Celesta A. Albonetti, *Sentencing Under the Federal Sentencing Guidelines: Effects of Defendant Characteristics, Guilty Pleas, and Departures on Sentence Outcomes for Drug Offenses, 1991-1992*, 31 LAW & SOC'Y REV. 789 (1997) (same); Margareth Etienne, *Sentencing Women: Reassessing the Claims of Disparity*, 14 J. GENDER RACE & JUST. 73, 73 (2010) (noting that sentencing disparities based on gender remain "among the most visible and persistent"); Carla C. Kunin et al., *An Archival Study of Decision-Making in Child Custody Disputes*, 48 J. CLINICAL PSYCHOL. 564 (1992) (finding preference for women in child custody decisions); *see also* Rachlinski & Wistrich, *supra* note 131, at 220-21 (surveying literature on implicit gender bias).

133. *See, e.g.*, Holger Spamann & Lars Klöhn, *Justice Is Less Blind, and Less Legalistic, than We Thought: Evidence from an Experiment with Real Judges*, 45 J. LEGAL STUD. 255 (2016)

Moreover, judges' decisions are clearly responsive to their political preferences.[134]

Judges' above-average general intelligence does not render them less susceptible to motivated cognition; indeed, it may exacerbate the problem. Kahan et al. found that higher general intelligence creates *greater* polarization on issues associated with identity protective cognition.[135] Intelligence, access to information, and education are not correctives to cognitive tribalism; to the contrary, the polarizing effects of cultural and identity protective cognition tend to be positively associated with access to information and technical proficiency.[136]

(experimental study of federal judges; precedent had less influence on decision to affirm or reverse conviction than did defendants' individual characteristics); Andrew J. Wistrich et al., *Heart Versus Head: Do Judges Follow the Law of Follow Their Feelings?*, 93 TEX. L. REV. 855, 898-99 (2015) (reporting series of experiments on 1,800 state and federal judges in United States and Canada; "judges simply favored the litigant who generated the more positive affective response").

134. The literature on this point is voluminous. *See generally* Lee Epstein et al., *Ideology and the Study of Judicial Behavior*, *in* IDEOLOGY, PSYCHOLOGY, & LAW 717-23 (Jon Hanson ed., 2012) (surveying political science literature on ideology and judicial decision making).

The studies on implicit bias and the influence of political ideology on judges' decisions may appear to stand in some tension with Kahan et al.'s conclusion that the results of their study "supply reason to discount the pervasive claim that judges are 'politicians in robes.'" Kahan et al., *supra* note 124, at 422. But that assertion rests on a somewhat semantic distinction between normative judgments that are "intrinsic" to legal decision-making and those that are "extrinsic" to it. Kahan et al. correctly point out that some legal judgments—the evaluation of "reasonable" behavior, for example, or of constitutional challenges to the death penalty as cruel and unusual—necessarily require the judge to make some normative judgment. *Id*. at 360-61, 413. Counting such intrinsic judgments as ideological "injects noise into empirical analyses of case outcomes but also biases it toward overstated estimates of the impact of 'ideology' on judicial decisionmaking." *Id*. at 360. Conceptually this makes sense, but the authors' sweeping rejection of the "ideological" component of judicial decision-making must be read with the distinction in mind. Kahan et al. do not deny that legal decisions involving intrinsic normative judgments will be influenced by judges' normative commitments, they simply contend that this is a legitimate and necessary part of legal reasoning. *Id*. But these intrinsic normative judgments—about the seriousness of a criminal defendant's offense, for example—may well incorporate normatively *illegitimate* factors, such as the defendant's race.

135. Dan M. Kahan et al., *The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks*, 2 NATURE CLIMATE CHANGE 732 (2012) [hereinafter Kahan, *Polarizing Impact*]; *see also* Kahan et al., *They Saw a Protest: Cognitive Illiberalism and the Speech-Conduct Distinction*, 64 STAN. L. REV. 851 (2012) [hereinafter Kahan, *Cognitive Illiberalism*] (finding cultural cognition effects in interpretation of quantitative data).

136. *See, e.g.*, Brendan Nyhan & Jason Reifler, *Does Correcting Myths about the Flu Vaccine Work? An Experimental Evaluation of the Effects of Corrective Information*, 33 VACCINE 459 (2014) (finding that corrective information that the influenza vaccine cannot cause influenza paradoxically resulted in individuals with an initially high degree of concern about the vaccine self-reporting a *lower* probability that they would receive it); Kahan, *Polarizing Impact*, *supra* note 135 (polarization of interpretation of quantitative data on politically salient issue was highest among

More intelligent and educated individuals become more adept at reconciling empirical data with their normative priors. Thus, while judges' situation sense may insulate them from the effects of identity-protective cognition while performing technical legal interpretive tasks involving no intrinsic normative judgments, it may be the case that they are *more* susceptible, by virtue of their higher general intelligence, to such effects when performing tasks that contain an intrinsic normative component.[137]

Even given all the above, the premise of judicial epistemic exceptionality might yet be warranted if judges are systemically better at *mitigating* the biases and effects to which they are susceptible than jurors are. Indeed, this is a central tenet of some doctrines of epistemic exceptionalism—judges are presumed to disregard the prejudicial effects of evidence and consider it only for the point to which it is narrowly relevant.[138] Jurors are notoriously incapable of this feat; many studies show that instructions to disregard inadmissible evidence to which mock jurors have been exposed are generally ineffective.[139] And the available evidence supports Judge Hand's conclusion that the limiting instruction is a "recommendation to the jury of a mental gymnastic which is beyond, not only their powers, but anybody's else"—including the powers of a federal judge.[140] In the most comprehensive study on this question, Wistrich et al. tested the ability of judges to disregard several categories of legally inadmissible evidence: settlement demands, conversations protected by the attorney-client privilege, the sexual history of the complaining witness in a rape trial, and information obtained in violation of a criminal defendant's right to counsel.[141] They found that judges'

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respondents who displayed high numeracy); Kahan, *Polarizing Impact*, *supra* note 135, at 732 (finding that "[m]embers of the public with the highest degrees of science literacy and technical reasoning capacity were *not* the most concerned about climate change. Rather, they were the ones among whom *cultural polarization* was greatest."). Reflective "System 2" thinking is also not a reliable guard against motivated cognition; indeed, some experimental evidence suggests that "the disposition to engage in conscious and effortful System 2 information processing . . . actually *magnifies* the impact of motivated reasoning." Dan M. Kahan, *Ideology, Motivated Reasoning, and Cognitive Reflection*, 8 JUDGMENT & DECISION MAKING 407, 416 (2013); *see also* Kunda, *supra* note 100, at 487 ("[I]t seems possible that accuracy goals, when paired with directional goals, will often enhance rather than reduce bias. This is because the more extensive processing caused by accuracy goals may facilitate the construction of justifications for desired conclusions.").

137. *See supra* note 134 and accompanying text.

138. *See supra* note 19.

139. *See generally* Nancy Steblay et al., *The Impact on Juror Verdicts of Judicial Instruction to Disregard Inadmissible Evidence: A Meta-Analysis*, 30 LAW & HUM. BEHAV. 469, 486 (2006) (meta-analysis of 48 studies concluding that exposure to inadmissible evidence has a "small, but reliable" effect on jury deliberation, and that judicial instructions to disregard such evidence "do[] not fully eliminate the impact").

140. Nash v. United States, 54 F.2d 1006, 1007 (2d Cir. 1932) (Hand., J.).

141. Andrew J. Wistrich et al., *Can Judges Ignore Inadmissible Information? The Difficulty of Deliberately Disregarding*, 153 U. PA. L. REV. 1251, 1251 (2005).

decision-making process is influenced by information deemed inadmissible,[142] albeit with two significant exceptions: judges are generally able to disregard information concerning the outcome of a police search when adjudicating issues of probable cause,[143] and they show some ability to disregard illegally obtained confessions.[144] In a similar study, Landsman and Rakos found that judges and laypersons were equally incapable of disregarding inadmissible information to which they had been exposed.[145] Interestingly, however, both the judges and laypersons in Landsman and Rakos's study shared a belief that judges were *better* than laypersons at disregarding such information.[146] Even if not empirically well supported, the premises of epistemic exceptionalism appear to be deeply entrenched in the popular imagination.[147]

B. Complexity and Epistemic Competence

We turn now to a second premise of epistemic exceptionalism: the claim that judges possess a domain-general superiority to juries in interpreting complex or technical evidence.[148] This premise underlies several manifestations of epistemic exceptionalism, from the complexity exceptions of *Japanese Electronic*

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142. For example, the percent of judges saying they would convict the defendant in a hypothetical rape case dropped from 49% to 20% when the judges were given information about the victim's sexual history that is inadmissible under the jurisdiction's rape shield law, a statistically significant decline. *Id*. at 1302.

143. *Id*. at 1313-18; *see also* Jeffrey J. Rachlinski et al., *Probable Cause, Probability, and Hindsight*, 8 J. EMPIRICAL LEGAL STUD. 72 (2011) (study of 900 state and federal judges finding that probable cause judgments are generally unaffected by knowledge of outcome).

144. Wistrich et al., *supra* note 141, at 1318-22. Subsequent work has shown that judges' willingness to consider inadmissible evidence in criminal cases varies with the gravity of the crime and the magnitude of police misconduct. *See* Jeffrey J. Rachlinski et al., *Altering Attention in Adjudication*, 60 UCLA L. REV. 1586, 1613 (2013).

145. Stephan Landsman & Richard F. Rakos, *A Preliminary Inquiry into the Effect of Potentially Biasing Information on Judges and Jurors in Civil Litigation*, 12 BEHAV. SCI. & L. 113 (1994).

146. *Id*. at 117.

147. This may be the point. *See infra* Part IV.A.; *see also* Schauer, *supra* note 10, at 188 ("[W]e assume that judges are less prone than juries to the cognitive and decision-making failures we worry about in jurors, possibly because judges are smarter, possibly because they are better educated, possibly because of their greater experience in hearing testimony and finding facts, and almost certainly because of their legal training and legal role-internalization.").

148. I specify "domain-general" because judges are, of course, experts in the domain of law. But expertise is domain-specific; expertise in one domain does not necessarily translate even into closely related domains, much less to domains further removed. *See, e.g.,* HARRY COLLINS, GRAVITY'S KISS: THE DETECTION OF GRAVITATIONAL WAVES 317 (2017) ("imitation game" scores of non-specialist physicists on technical questions concerning gravitational wave physics were closer to the scores of social scientists than scores of gravitational wave specialists).

Products[149] and *Markman*[150] to the lax application of *Daubert* in bench trials and pretrial proceedings[151] and the general judicial reluctance to appoint independent experts under FRE 706.[152] This section will discuss, first, the extent to which judges are susceptible to the cognitive heuristics and biases that can impede scientific laypersons' comprehension of statistical evidence, and second, the extent to which judges more generally are able to interpret and apply complex evidence reliably to the resolution of legal disputes.

Humans have not evolved the cognitive apparatus to intuitively draw valid inferences from statistical data.[153] We tend to exaggerate the significance of vivid anecdotes in comparison to statistical baselines—a complex phenomenon that Kahneman and Tversky term the *representativeness heuristic*, "in which probabilities are evaluated by the degree to which A is representative of B, that is, by the degree to which A resembles B."[154] Thus we tend to over-rely on simple stereotypes—for example, to overestimate the likelihood that an individual is a librarian rather than a farmer or airline pilot because the individual exhibits stereotypical librarian traits, without taking into account the relative frequency of librarians in the population.[155] We also tend to place undue weight on conspicuous outliers to the exclusion of statistical trends, as when antivaccinationists emphasize relatively rare instances of adverse events while ignoring the much greater number of cases in which vaccination causes no harm.[156] As Guthrie et al. note, "[w]hen people rely on the representativeness heuristic, they tend to undervalue statistical information, which can lead to notable decision errors."[157]

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149. *In re* Japanese Elec. Prods. Antitrust Litig., 631 F.2d 1069 (3d Cir. 1980); *see supra* Part II.B.

150. Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996); *see supra* Part II.B.

151. Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579 (1993); *see supra* Part II.A.3.

152. *See supra* notes 50-55 and accompanying text.

153. *See* David L. Faigman & A.J. Baglioni, Jr., *Bayes' Theorem in the Trial Process: Instructing Jurors on the Value of Statistical Evidence*, 12 LAW & HUM. BEHAV. 1, 4 (1988) (citing studies that "generally show[] that individuals do not intuitively understand rules of statistical inference.").

154. Tversky & Kahneman, *supra* note 94, at 1124; *cf.* Daniel Kahneman & Amos Tversky, *Subjective Probability: A Judgment of Representativeness*, 3 COGNITIVE PSYCHOL. 430 (1972) (describing the representativeness heuristic); Guthrie et al., *supra* note 83, at 806 ("Individuating evidence is more salient and vivid, and hence more compelling than pallid base-rate statistics.").

155. Tversky & Kahneman, *supra* note 94, at 1124-25; *see also* Daniel Kahneman & Amos Tversky, *On the Psychology of Prediction*, 80 PSYCHOL. REV. 237, 241-42 (1973) (finding reliance on stereotype heuristics to the exclusion of base rate information).

156. *See, e.g.*, Robert M. Jacobson et al., *A Taxonomy of Reasoning Flaws in the Anti-Vaccine Movement*, 25 VACCINE 3146, 3146 (2007) (identifying "[d]ifficulty in detecting and correcting biases in incomplete and unrepresentative data" and "[e]agerness to interpret ambiguous and inconsistent data to fit theories and expectations" among the cognitive flaws in antivaccinationist rhetoric).

157. Guthrie et al., *supra* note 83, at 22; *see also* Joe S. Cecil et al., *Citizen Comprehension*

Both jurors[158] and judges[159] have difficulty correctly interpreting evidence grounded in statistics and probability. Both groups tend to under-weigh statistical evidence in comparison to other forms of evidence.[160] For example, Wells' experiments on judges and university students found that both groups were more

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of Difficult Issues: Lessons from Civil Jury Trials Symposium Issue on the Selection and Function of the Modern Jury, 40 AM. U. L. REV. 727, 757 (1990) ("Laypersons[, including both jurors and generalist judges,] view statistical information, a key aspect of much scientific and technical evidence, differently than experts trained in its interpretation.").

158. JOE S. CECIL, JURY SERVICE IN LENGTHY CIVIL TRIALS 8 (1987) (discussing jurors' difficulty understanding complex and technical evidence in complex antitrust actions); Jason Schklar & Shari Seidman Diamond, *Juror Reactions to DNA Evidence: Errors and Expectancies*, 23 LAW & HUM. BEHAV. 159, 178 (1999) ("[J]urors generally underweight probabilistic evidence in their decisions . . . . However, when jurors receive two separate probability estimates they appear to overweight the extremely small probability by misperceiving how the two estimates should be combined."); Brian C. Smith et al., *Jurors' Use of Probabilistic Evidence*, 20 LAW & HUM. BEHAV. 49 (1996) (jurors under-weigh statistical evidence relative to anecdotal evidence); Faigman & Baglioni, *supra* note 153, at 13 (mock jurors "significantly underutilized the statistical evidence"); Saks & Kidd, *supra* note 106 (rejecting hypothesis that jurors are "overawed" by technical evidence in favor of hypothesis that they tend to undervalue it). *But see* Neil Vidmar & Shari Seidman Diamond, *Juries and Expert Evidence*, 66 BROOK. L. REV. 1121, 1166-67 (2001) ("Although jurors struggle and are occasionally misled, they generally make reasonable use of complex material, utilizing the expert testimony when it is presented in a form that they can use.").

159. *See* SAKS & SPELLMAN, *supra* note 93, at 205 ("Most people, including most judges . . . have difficulty making good use of statistical pictures of the world."); Vidmar & Seidman Diamond, *supra* note 158, at 1170. Fienberg et al. undertook a qualitative examination of courts' engagement with statistical evidence in a variety of litigation contexts. NAT'L RESEARCH COUNCIL PANEL ON STATISTICAL ASSESSMENTS AS EVIDENCE IN THE COURTS, THE EVOLVING ROLE OF STATISTICAL ASSESSMENTS AS EVIDENCE IN THE COURTS (Stephen E. Fienberg ed., 1989). Their case studies revealed that judges struggle to interpret and apply statistical evidence in nearly all situations; even cases in which judges invested substantial time and effort in understanding the import of statistical evidence did not produce error-free judgments. *Id*. at 72-74.

160. *See, e.g.*, Daniel A. Krauss & Bruce D. Sales, *The Effects of Clinical and Scientific Expert Testimony on Juror Decision Making in Capital Sentencing*, 7 PSYCHOL. PUB. POL'Y & L. 267, 300 (2001) (mock jurors weighed clinical opinion testimony more highly than actuarial evidence); Schklar & Seidman Diamond, *supra* note 158, at 163 (defining the "misaggregation error" and citing studies describing it).

Perhaps the most notorious instance of judicial disregard of statistical evidence is the Supreme Court's rejection of the petitioner's evidence of systemic racial bias in the imposition of the death penalty in *McCleskey v. Kemp*, 481 U.S. 279 (1987), in which the court wrote that "[e]ven a sophisticated multiple-regression analysis . . . can only demonstrate a risk that the factor of race entered into some capital sentencing decisions and a necessarily lesser risk that race entered into any particular sentencing decision." As Cohen points out, "even the fact that an eyewitness testifies that she saw a particular event occur also only demonstrates that there is a risk (i.e., a probability) that the event has occurred." Neil B. Cohen, *The Gatekeeping Role in Civil Litigation and the Abdication of Legal Values in Favor of Scientific Values*, 33 SETON HALL L. REV. 943, 964 (2002).

reluctant to reach a verdict in favor of the plaintiff in a hypothetical civil case on the basis of purely statistical evidence than on other types of evidence, even when the subjective probabilities that the defendant acted negligently were identical.[161] For the most part, judges also resemble legal laypersons in their susceptibility to statistical fallacy. For example, the *inversion fallacy* confuses the conditional probability of an outcome given the evidence with the conditional probability of the evidence given the outcome—e.g., the false conclusion that a low probability of a DNA match given a defendant's innocence connotes a complementary high probability of guilt given a DNA match,[162] or that a high probability of injury given the defendant's negligence equates to a comparatively high probability of negligence given that injury occurred.[163] Jurors are susceptible to the inversion fallacy, and judges appear to be equally susceptible. Indeed, some studies have measured a *greater* susceptibility to forms of the inversion fallacy in judges than has been found in other mock juror studies. For example, Thompson and Schumann conducted two experiments in which 13.2% and 3%, respectively, of mock jurors gave answers consistent with what they term the "Prosecutor's Fallacy," a form of inversion fallacy.[164] Similarly, Kaye et al.'s study of mock jurors' assessment of statistical DNA evidence found that approximately 17% of respondents gave answers indicating susceptibility to the inversion fallacy.[165] Guthrie et al.'s study of judicial cognition, by comparison, found that 40% of judges committed the inversion fallacy in their responses to the study's evaluation of judicial susceptibility to the representativeness heuristic,[166] while Roth's examination of appellate courts' rejection of sufficiency challenges to convictions based on DNA alone found that "nearly all" such decisions committed the inversion fallacy.[167] Of course, it is unlikely that judges are actually *more* susceptible to the inversion fallacy than laypersons, but these studies give no reason to believe that they are resistant to it. Judges do, however, appear to be resistant to what Thompson and Schumann term the "Defense Attorney's

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161. Gary L. Wells, *Naked Statistical Evidence of Liability: Is Subjective Probability Enough?*, 62 J. PERSONALITY & SOC. PSYCHOL. 739, 748 (1992); *see also* Amos Tversky & Daniel Kahneman, *Evidential Impact of Base Rates*, *in* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES (Daniel Kahneman, Paul Slovic, & Amos Tversky eds., 1982).

162. *See* Andrea Roth, *Safety in Numbers—Deciding When DNA Alone is Enough to Convict*, 85 N.Y.U. L. REV. 1130, 1150-51 (2010).

163. *See* Guthrie et al., *supra* note 83, at 807-08 (discussing the cognitive illusion undergirding the doctrine of res ipsa loquitur).

164. William C. Thompson & Edward L. Schumann, *Interpretation of Statistical Evidence in Criminal Trials: The Prosecutor's Fallacy and the Defense Attorney's Fallacy*, 11 LAW & HUM. BEHAV. 167, 173, 179 (1987). The authors note that, in the second experiment, 28% of mock jurors identified the hypothetical prosecutor's argument asserting the fallacy as "correct," but only 3% professed a posterior probability of guilt consistent with the Prosecutor's Fallacy. *Id*. at 177-79.

165. David H. Kaye et al., *Statistics in the Jury Box: How Jurors Respond to Mitochondrial DNA Match Probabilities*, 4 J. EMPIRICAL LEGAL STUD. 797, 813 (2007).

166. Guthrie et al., *supra* note 83, at 809-10.

167. *See* Roth, *supra* note 162, at 1150-51.

Fallacy"—the false conclusion that "associative evidence is irrelevant . . . because it shows, at best, that the defendant and the perpetrator are both members of the same large group."[168] In Hans et al.'s comparative study, only 15% of judges accepted the fallacious argument presented by a hypothetical defense attorney that associative mitochondrial DNA evidence was irrelevant, compared to 49% of mock jurors.[169] Thus it may be true, as Guthrie et al. suggest,[170] that judicial experience grants judges resistance to *some* statistical fallacies; taken as a whole, however, the evidence does not support the strong claims of epistemic exceptionalism that judges are immune to fallacious cognition or have the ability to engage with statistical evidence at an expert level.[171]

Turning to the complexity exceptions established by *Japanese Electronic Products* and *Markman*,[172] neither is well supported by the available empirical evidence. Both complexity exceptions share a premise: that generalist judges have an epistemic advantage in interpreting factually complex or technical evidence. There is little evidence that the general complexity exception's underlying premise is true. To be sure, jurors do struggle with complex evidence.[173] But the

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168. Thompson & Schumann, *supra* note 164, at 171.

169. Hans, *supra* note 6, at 36-37.

170. Guthrie et al. conclude that "judicial experience might curb undue reliance on the representativeness heuristic" and rate judges as "better" than other decision-makers at resisting the representativeness heuristic, solely on the basis of a comparison of their study with one in which only 18% of physicians gave the correct answer to a question of statistical analysis. *See* Guthrie et al., *supra* note 83, at 824 (discussing Ward Casscells et al., *Interpretations by Physicians of Clinical Laboratory Results*, 299 NEW ENG. J. MED. 999, 999-1000 (1978)). Surprisingly, given that their discussion of the other cognitive illusions to which judges are susceptible includes comparisons to general population or mock juror studies, the authors do not cite the studies discussed in this paragraph. Moreover, other studies involving larger sample sizes have indicated that medical and psychological training have a *greater* effect in mitigating susceptibility to the representativeness heuristic than does legal training. *See* Darrin R. Lehman et al., *The Effects of Graduate Training on Reasoning: Formal Discipline and Thinking About Everyday-life Events*, 43 AM. PSYCHOL. 431, 437 (1988).

171. This is not a meta-analysis, and I cannot demonstrate that *no* statistically significant difference between judges and jurors exists. Rather, I claim that, even if such a difference exists, it is insufficiently large in magnitude to warrant the double standards of epistemic exceptionalism, particularly given judges' well-documented difficulties in interpreting statistical evidence.

172. *See supra* Part II.B.

173. *See* Irwin A. Horowitz et al., *The Effects of Complexity on Jurors' Verdicts and Construction of Evidence*, 86 J. APPLIED PSYCHOL. 641, 649 (2001) (cases with high "information load" resulted in jurors recalling facts of lesser probative value, to the plaintiff's detriment); Matthew A. Reiber & Jill D. Weinberg, *The Complexity of Complexity: An Empirical Study of Juror Competence in Civil Cases*, 78 U. CIN. L. REV. 929, 963 (2009) (results of survey responses "suggest that modest increases in complexity create problems even for well-educated jurors who possess prior jury experience"); Heuer & Penrod, *supra* note 73, at 41-42. (finding that "increases in the quantity of information also caused the jurors to report greater difficulties in reaching a verdict and less confidence that their verdict reflected a proper understanding of the judge's

premise underlying the complexity exception is a comparative one: it holds not only that jurors are sub-optimal decision-makers in complex cases, but that judges are categorically *better*. Judges and juries show high rates of agreement in outcomes, rates that are unaffected by the complexity of the evidence.[174] Both groups sometimes perform well at basic comprehension tasks.[175] But judges' expertise in legal doctrine does not extend to expertise in the subject matter of factually complex cases. If the complexity arises from highly technical subject matter or esoteric expert testimony, judges are laypersons just as jurors are; they lack expertise in the subject domain and are forced to utilize unreliable heuristics to make credibility determinations between competing expert witnesses.[176] Thus, the general complexity exception would trade away the benefits of jury adjudication—to say nothing of the parties' Seventh Amendment rights—for no tangible benefit.

Similarly, any judicial advantage in patent claim construction is likely modest. Empirical comparisons of judge and jury claim construction do not exist,[177] but the available evidence indicates that generalist judges have great difficulty with patent construction. Studies indicate that the Federal Circuit reverses about one-third of appealed claim constructions.[178] Moreover, contrary to the Court's prediction in *Markman*, general legal expertise does not appear to improve a judge's ability to accurately construe patent claims. Stiernberg's study of the effect of scientific expertise on the quality of claim construction found that

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instructions").

174. *See* Waites & Giles, *supra* note 74, at 23-25 (citing studies).

175. *See, e.g.*, Hans, *supra* note 6, at 38 ("[B]oth judges and jurors performed reasonably well [on a comprehension test concerning mitochondrial DNA], scoring between eight and nine questions correct on average.").

176. *See generally* Dillon, *supra* note 67 (discussing generalist courts' lack of epistemic competence to comprehend scientific expert testimony).

177. Moore's study of differences between judge and jury patent trials from 1983 to 1999 concluded:

> Patent holders have been more successful in jury trials than in bench trials. Juries find for the patent holder more often on validity, infringement, and willfulness issues and they do award higher damages. The magnitude of the differences, however, is much smaller than many might have anticipated. In addition, there are no significant differences in outcome data from judge and jury trials on the issue of enforceability of the patents confounding popular perception.

Kimberly A. Moore, *Judges, Juries, and Patent Cases: An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 408 (2000).

178. Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases*, 15 HARV. J. L. & TECH. 1, 3 (2001) (33% rate of reversal of appealed claim constructions between 1996-2000); Kimberly A. Moore, Markman *Eight Years Later: Is Claim Construction More Predictable*, 9 LEWIS & CLARK L. REV. 231, 233 (2005) (finding a 34.5% reversal rate of appealed claim constructions from 1996-2003); David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 248-49 (2008) (finding 32% reversal rate of lower court claim constructions between 1996-2007).

a judge's years on the bench—a proxy for the judge's level of general legal expertise—is not significantly associated with the likelihood that the Federal Circuit will reverse the judge's claim constructions.[179] It *is* the case that a generalist judge's prior experience with patent cases specifically is statistically significantly associated with a decreased likelihood of reversal, though the effect is relatively modest.[180] All this, in addition to the fact that Federal Circuit judges who themselves possess substantive expertise in the relevant scientific or technical domain are significantly more likely to vote to reverse the district court's claim constructions,[181] suggests that "there is some tangible skill or quality peculiar to the claim construction exercise that lies beyond the average experience of a generalist judge."[182] It may well be the case that a specialized patent trial court, staffed by judges with expertise in the scientific and technical domains with which patent law routinely interacts, could more effectively construe patent claim language,[183] but there is little reason to think that generalist judges are substantially better than lay jurors. *Markman*, replete with the language and assumptions of epistemic exceptionalism, simply traded one generalist decision maker for another, to little apparent benefit.[184]

IV. MITIGATING EPISTEMIC EXCEPTIONALISM

A. Institutional Logic of Epistemic Exceptionalism

The reader may by now be wondering whether I am being reductive and perhaps ungenerous in my characterization of judges' overconfidence as the source of epistemic exceptionalism. If judicial minds are human minds, then surely judges vary as widely as any other group in their cognitive styles; some are overconfident and imperious—"hedgehogs," in Tetlock's taxonomy of cognitive

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179. Charlie Stiernberg, *Science, Patent Law, and Epistemic Legitimacy: An Empirical Study of Technically Trained Federal Circuit Judges*, 27 HARV. J. L. & TECH. 279, 294-95 (2013); *see also* Schwartz, *supra* note 178, at 267 (empirical study concluding that "[c]ontrary to theory, district court judges do not appear to improve based upon various measures of experience").

180. *See* Stiernberg, *supra* note 179, at 294-95 ("[F]or every additional patent case a district court judge has had on his or her docket at the time of issuing a claim construction order, the odds of being overruled on a claim construction issue . . . decrease by 0.26 percent.").

181. *Id*. at 295 ("the predicted probability of a Federal Circuit judge overturning a claim construction increases by 53.42 percent when his or her technical background is relevant to the patent at issue").

182. *Id*.

183. *See* Jay P. Kesan & Gwendolyn G. Ball, *Judicial Experience and the Efficiency and Accuracy of Patent Adjudication: An Empirical Analysis of the Case for a Specialized Patent Trial Court*, 24 HARV. J. L. & TECH. 393 (2011).

184. *Markman* also based its holding on historical practice. Markman v. Westview Instruments, Inc., 517 U.S. 370, 378-83. I take no position on that historical analysis or its sufficiency as an alternative rationale for *Markman*'s outcome.

styles—while others are humble and thoughtful—Tetlockian "foxes."[185] This is true; my account of the foundations of epistemic exceptionalism does not assert that most judges are individually hubristic in their outlook. The overconfidence to which I refer is an emergent property of formal legal decisions, taken in the aggregate and expressed in the doctrine of appellate courts[186] and in the discretionary practices of trial judges; it is a characteristic of the institution of the judiciary, not of any individual judge.[187] Individual judges may well be aware of their personal epistemic limitations; acting collectively and in their official capacities, however, they create a body of doctrine characterized by epistemic exceptionalism.

Why would judges' collective official actions give rise to an emergent epistemic hubris, even when individual judges may be epistemically humble? I believe that the answer lies in judges' institutional incentives. Courts have an interest in being perceived as disinterested and apolitical—as umpires rather than players, in Chief Justice Roberts's famous analogy.[188] Correctly or not, they

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185. PHILIP E. TETLOCK, EXPERT POLITICAL JUDGMENT: HOW GOOD IS IT? HOW CAN WE KNOW? 2 (2005). Tetlock, drawing on Isaiah Berlin, describes the cognitive style of the hedgehog as "those who 'know one big thing,' toil devotedly within one tradition, and reach for formulaic solutions to ill-defined problems," while cognitive foxes "'know many little things,' draw from an eclectic array of traditions, and accept ambiguity and contradiction as inevitable features of life." *Id*. (quoting Isaiah Berlin, *The Hedgehog and the Fox*, *in* ISAIAH BERLIN, THE PROPER STUDY OF MANKIND: AN ANTHOLOGY OF ESSAYS 436 (1997)).

186. Doctrines of epistemic exceptionalism are formulated in *appellate* courts, and generally involve the ascription of superhuman cognitive abilities to the judges of *trial* courts. This provides fertile ground for the doctrines of epistemic exceptionalism to take root. Appellate judges generally do not make hubristic claims on their own behalf, but rather express their confidence in the abilities of their district court colleagues. *See, e.g.*, Daubert v. Merrill Dow Pharm., Inc., 509 U.S. 579, 592-93 (1993) (FRE 702 requires "a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue. We are confident that federal judges possess the capacity to undertake this review."). *But see id*. at 600 (Rehnquist. C.J., dissenting) ("I defer to no one in my confidence in federal judges; but I am at a loss to know what is meant when it is said that the scientific status of a theory depends on its 'falsifiability,' and I suspect some of them will be, too."). Of course, the individual trial judge who attempts to disclaim this projection of superhuman cognition is vulnerable to appellate rebuke. *See, e.g.*, McClain v. Metabolife Intern., Inc., 401 F.3d 1233, 1238 (11th Cir. 2005) (district judge's denial of *Daubert* motion on the ground that he lacked scientific knowledge necessary to adjudicate it was abuse of discretion).

187. *See* Dillon, *supra* note 67 (defending the premise that mental states can be ascribed to institutions and groups); *see also* Alvin Goldman, *A Guide to Social Epistemology*, *in* RELIABILISM AND CONTEMPORARY EPISTEMOLOGY 226 (Alvin I. Goldman ed., 2012); Kay Mathiesen, *The Epistemic Features of Group Belief*, 2 EPISTEME 161 (2006).

188. *Confirmation Hearing on the Nomination of John G. Roberts, Jr. To Be Chief Justice of the United States: Hearing Before the* S. Comm. on the Judiciary, 109th Cong. 55 (2005) ("Judges and justices are servants of the law, not the other way around. Judges are like umpires. Umpires don't make the rules, they apply them."); *see also* Politico Staff, *Full Text: Brett Kavanaugh*

perceive their institutional legitimacy as tied to public perceptions of their neutrality.[189] And judges are keenly aware that, as the "least dangerous" branch of government, possessing "no influence over either the sword or the purse,"[190] they are dependent upon that perception of legitimacy to motivate compliance with their judgments by other branches.[191] Thus a powerful motivation for the claims of superhuman objectivity and competence that underlie the doctrines of epistemic exceptionalism springs from the logic of the judiciary's relative vulnerability: Only by making such claims can courts preserve that most valuable of political resources, their institutional legitimacy.

But we know that, in fact, judges are not perfectly objective, and legal questions often are not amenable to mechanistic resolution.[192] In moments of candor, judges themselves have admitted as much.[193] As Martin Shapiro observed, judges have every incentive to "lie"—to perpetuate the myth of their own complete impartiality.[194] Indeed, that lie might be essential to courts' ability to function effectively. The problem of epistemic exceptionalism arises when courts act in accordance with that rhetoric. Epistemic exceptionalism arises not from cognitive dissonance but from the lack thereof. Judges, compelled to present themselves to the public as apolitical, unbiased, and supremely competent across

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Confirmation Hearing Opening Statement, POLITICO (Sept. 4, 2018 04:49 PM), https://www.politico.com/story/2018/09/04/full-text-brett-kavanaugh-confirmation-hearing-opening-statements-806420 [https://perma.cc/HR3A-6AKP] ("A good judge must be an umpire—a neutral and impartial arbiter who favors no litigant or policy.").

189. *See, e.g.*, Casey v. Planned Parenthood of Southeastern Penn., 505 U.S. 833, 866 (1992) ("[T]he Court's legitimacy depends on making legally principled decisions under circumstances in which their principled character is sufficiently plausible to be accepted by the Nation.").

190. THE FEDERALIST NO. 78 (Alexander Hamilton); *cf.* ALEXANDER M. BICKEL, THE LEAST DANGEROUS BRANCH: THE SUPREME COURT AT THE BAR OF POLITICS (2d ed. 1986).

191. *See, e.g.*, MATTHEW ERIC KANE HALL, THE NATURE OF SUPREME COURT POWER (2011); GERALD N. ROSENBERG, THE HOLLOW HOPE: CAN COURTS BRING ABOUT SOCIAL CHANGE? (2d ed. 2008); Lauren Maisel Goldsmith & James R. Dillon, *The Hallowed Hope: The School Prayer Cases and Social Change*, 59 ST. LOUIS U. L.J. 409 (2015).

192. *See, e.g.*, JEFFREY SEGAL & HAROLD SPAETH, THE SUPREME COURT AND THE ATTITUDINAL MODEL REVISITED (2015).

193. BENJAMIN N. CARDOZO, THE NATURE OF THE JUDICIAL PROCESS (1921); OLIVER WENDELL HOLMES, THE COMMON LAW (1881); RICHARD A. POSNER, HOW JUDGES THINK (2008); *see also* Jonathan Masur, *How Judges Think: A Conversation with Judge Richard Posner*, U. CHI. L. SCH. (Aug. 20, 2009), https://www.law.uchicago.edu/news/how-judges-think-conversation-judge-richard-posner [https://perma.cc/RR2E-UT5U] (Judge Posner states that "American judges operate in a setting of extreme uncertainty, which forces them to exercise an uncomfortably large amount of discretion, casting them often in the role of de facto legislators. They are reluctant to admit that they are . . . 'occasional legislators,' and have been skillful in concealing the fact from the public, being abetted in this regard by the legal profession, which has an interest in depicting the law as a domain of sophisticated reasoning rather than, to a considerable extent, of politics, intuition, and emotion.").

194. Martin Shapiro, *Judges as Liars*, 17 HARV. J. L. & PUB. POL'Y 155 (1994).

all domains, come to act in accordance with that pretense.[195] In so doing, they risk undermining their own claims by creating a body of doctrine that threatens to exacerbate the very cognitive vulnerabilities that judges, in their professional capacities, are compelled to deny.

B. Correcting the Problem: A Three-Tiered Approach

Guthrie et al. note that "[i]n the course of making decisions in the courtroom, judges certainly face more complex fact patterns, have more motivation to make good decisions, have more time to make decisions, and receive assistance from litigants, lawyers, and clerks" than they do in answering hypothetical questions.[196] "But," they add, "unless these factors alter the fundamental ways judges think, they will not eliminate the effects of cognitive illusions."[197] The "way judges think" might refer to one of two things—first, the *process* of legal decision making, including the inputs and formal procedures by which courts decide cases; and second, judges' internal *modes of cognition*. This section will discuss strategies for addressing the phenomenon of epistemic exceptionalism that engage both "ways" of thinking.

This section will propose three tiers of solutions to the problem of epistemic exceptionalism. The bottom tier addresses the specific manifestations of epistemic exceptionalism discussed in Part III. Most of these manifestations can be corrected rather easily through doctrinal reforms, but correcting them will not eliminate the root causes of epistemic exceptionalism or prevent future manifestations. The middle tier proposes institutional reforms to further insulate the judicial process against the effects of cognitive error. Though these reforms would improve the process, they, too, do not address the root causes. The top tier, therefore, discusses how we might instill in the judiciary a professional norm of epistemic humility, characterized by a more realistic conception of judges' cognitive limitations.

1. Bottom Tier: Doctrinal Reforms to Resolve Existing Problems.—

a. FRE apply with equal force in pretrial proceedings and bench trials.—With the exception of preliminary questions of admissibility[198] and

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195. I believe this explains the disparity between courts' willingness to acknowledge that limiting instructions to jurors represent something of a fiction insofar as we do not believe that juries literally refrain from drawing all forbidden inferences from evidence admitted for a particular purpose, but maintain a strong pretense that trial judges are in fact capable of that feat. *See, e.g.,* Michelson v. United States, 335 U.S. 469, 484 (1948) ("We do not overlook or minimize the consideration that the jury almost surely cannot comprehend the Judge's limiting instructions." (internal quotation marks omitted)). Courts' candor in recognizing the limiting instruction as an imperfect compromise among competing interests does not call their institutional authority into question to the extent that the same admission with respect to presumptions that judges are capable of that feat would.

196. Guthrie et al., *supra* note 83, at 821.

197. *Id*.

198. FED. R. EVID. 104(a).

miscellaneous proceedings,[199] the FRE by their terms already apply to pretrial proceedings and bench trials.[200] Courts should therefore reverse doctrinal rules holding otherwise, and should apply the FRE to pretrial and bench trial proceedings with the same force as jury trials. This is simply a matter of enforcing the existing rules without the distorting effects of epistemic exceptionalism,[201] but it is not only a matter of fidelity to the statutory text.

In addition to rationales grounded in epistemic exceptionalism, courts sometimes justify exemptions from the FRE for bench trials on the ground that applying the FRE to exclude evidence from consideration would be futile where the judge acts as factfinder—the judge would see the evidence in the admissibility hearing anyway.[202] It is true that pretrial exposure to inadmissible evidence would likely affect judicial factfinding—judges, like jurors,[203] are not entirely capable of disregarding evidence to which they have been exposed even when instructed to do so.[204] But that does not mean that applying the FRE to exclude inadmissible evidence in bench trials and pretrial proceedings would be futile. Temporal proximity alone makes a difference—evidence to which the judge was exposed in a pretrial motion to exclude is less fresh in the mind than is evidence introduced during trial.[205] Moreover, the act of ruling a piece of evidence inadmissible would focus the judge's attention on its illegitimacy, which can reduce the effect of motivated cognition.[206] Of course, this solution is

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199. FED. R. EVID. 1101(d).

200. FED. R. EVID. 101; FED. R, EVID. 1101.

201. The double standard between jury and bench trials, rationalized on the basis of epistemic exceptionalism, existed in the law of evidence before the advent of the FRE. *See supra* note 42. But the FRE supersede prior practice; thus, historical entrenchment is no justification for perpetuating a double standard for which the FRE make no textual provision. *See* Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 587 (1993).

202. *See, e.g.*, CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, 1 FEDERAL EVIDENCE § 4:13 (4th ed. 2017) ("Excluding evidence for concerns of 'unfair prejudice' in bench trials is in a sense ridiculous. The judge is exposed to proffered evidence when asked to rule on its admissibility."); Rachlinski & Wistrich, *supra* note 131, at 217 ("Whereas information can be kept from a jury[,] judges cannot shield themselves from inadmissible evidence. They are both the gatekeepers of evidence and the decision-makers.").

203. *See, e.g.*, Steblay et al., *supra* note 139.

204. *See supra* notes 124-35 and accompanying text.

205. *Cf.* Guthrie et al., *supra* note 83, at 793 (noting that motion to dismiss for lack of subject matter jurisdiction would not provide anchoring effect in real-life damages calculation; "[the] temporal separation of the motion from the determination of the damage award would dull any anchoring effect the motion might otherwise have").

206. Sood, *Motivated Cognition*, *supra* note 83, at 320 (citing studies). On the other hand, a formal ruling of inadmissibility could have an effect similar to that of limiting instructions on the jury, which can produce "backlash effects" in which the forbidden inference is highlighted in the jurors' minds. Rachel K. Cush & Jane Goodman Delahunty, *The Influence of Limiting Instructions on Processing and Judgements of Emotionally Evocative Evidence*, 13 PSYCHIATRY, PSYCHOL. & L. 110 (2006); Steblay et al., *supra* note 139.

imperfect—the judge is still exposed to the inadmissible evidence cannot entirely expunge that evidence or its prejudicial effect from her mind— but it is nevertheless an improvement over existing practice. As discussed below, additional steps are necessary to fully insulate the trial judge from the epistemic effects of inadmissible evidence.[207]

I should, at this point, acknowledge the one manifestation of epistemic exceptionalism discussed in this Article that may stand as an exception to the need for doctrinal reform. My thesis has been that the claims of epistemic exceptionalism are largely exaggerated, and that the legal doctrines in which those claims manifest are largely misguided insofar as they create a substantial risk that judicial factfinding will be infected with the very sorts of cognitive error and bias that the FRE and other rules are intended to prevent. But "largely" does not mean "entirely," and we need not oppose distinctions between judge and jury when such distinctions are well supported empirically. The double standard applicable to bench and jury trials in the application of the *Bruton* rule may be one such justifiable distinction.[208] This double standard rests on the premise that judges are more capable than jurors of disregarding the prejudicial effect on the non-declarant co-defendant of admitting an admission by the declarant defendant.[209] This premise is more plausible in light of the available evidence than the other claims of epistemic exceptionalism discussed herein. For example, Wistrich et al. found that judges are more capable than jurors of disregarding illegally obtained confessions when evaluating a defendant's guilt.[210] This is not definitive—Wistrich et al.'s experiment involved a hypothetical *Miranda* violation, not a *Bruton* situation—but it suggests that judges may be better than jurors at disregarding inadmissible admissions. My preference, in an abundance of caution and in light of the fact that most claims of epistemic exceptionalism are overstated, would be to suspend the *Bruton* double standard at least until its empirical foundations could be more thoroughly examined, but I must also acknowledge that the *Bruton* double standard is, at least, better supported than the other manifestations of epistemic exceptionalism that this Article has identified.

b. Eliminate complexity exceptions in generalist courts.—Complexity exceptions shifting factfinding prerogatives from juries to generalist judges—whether general exceptions such as the one recognized in *Japanese Electronic Products*[211] or narrower ones such as the patent claim construction hearings approved in *Markman*[212]—eliminate the benefits of jury adjudication for little corresponding gain. The available evidence suggests that generalist judges lack any significant epistemic advantage over the jury in comprehending complex evidence, and that they are not particularly skilled at patent claim construction. Lacking specialized expertise, judges must rely on heuristic decision making just

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207. *See infra* Part IV.B.2.a.

208. *See supra* Part II.A.5.

209. *See supra* note 58 (citing cases).

210. Wistrich et al., *supra* note 141, at 1318-22.

211. *In re* Japanese Elec. Prods. Antitrust Litig., 631 F.2d 1069, 1084 (3d Cir. 1980).

212. Markman v. Westview Instruments, Inc., 517 U.S. 370, 389 (1996).

as juries must. This is not to say that juries are good at these cognitively demanding tasks, only that generalist judges are insufficiently better to warrant abridgement of the jury's factfinding prerogatives. We might well desire a more effective solution to the problem of epistemic competence in generalist courts—specialized tribunals are one proposed solution, though they present their own challenges[213]—but epistemic exceptionalism substantially overestimates the value that generalist judges can add to the quality of the outcome in comparison to generalist jurors.

2. Middle Tier: Structural Reforms to Mitigate Future Manifestations of Epistemic Exceptionalism.—

a. Single-blind concealment of excluded evidence through bifurcated trial procedure.—"In retrospect, we were totally blinded by our belief [in our findings] . . . . [W]e were not as careful or rigorous as we should have been . . . in interpreting these experiments."[214] Such were the words of Nobel Laureate Jack Szostack concerning the retraction of a 2016 study following the authors' post-publication discovery that the paper had misinterpreted experimental data. Law is not the only domain in which unconscious cognitive biases can affect decision making. These effects are particularly salient in the natural and social sciences, and scientists are far more cognizant than judges of the potentially confounding effects of observer bias[215] and of investigators' susceptibility to motivated reasoning.[216] For that reason, the double-blind experiment, in which the identity of the treatment and control groups is masked from participants and investigators until the experiment is complete, is the "gold standard" of inquiry in the experimental sciences.[217] Although the double-blind form cannot be replicated in

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213. *See, e.g.*, Dillon, *supra* note 67 (discussing proposals for specialized tribunals).

214. Victoria Stern, *"Definitely Embarrassing:" Nobel Laureate Retracts Non-Reproducible Paper in Nature Journal*, RETRACTION WATCH (Dec. 5, 2017), http://retractionwatch.com/2017/12/05/definitely-embarrassing-nobel-laureate-retracts-non-reproducible-paper-nature-journal [https://perma.cc/7RBV-83KS]. For the sake of clarity, I note that Szostack is using "blinded" in a different, negative sense than I use it in this section. The significance of this quote is its illustration that scientists, too, are susceptible to the effects of motivated cognition.

215. *See, e.g.*, Stewart Wolf, *Effects of Suggestion and Conditioning on the Action of Chemical Agents in Human Subjects—The Pharmacology of Placebos*, 29 J. CLINICAL INVESTIGATION 100 (1950).

216. *See, e.g.*, Jonathan J. Koehler, *The Influence of Prior Beliefs on Scientific Judgments of Evidence Quality*, 56 ORGANIZATIONAL BEHAV. & HUM. DECISION MAKING PROCESSES 28 (1993); Timothy D. Wilson et al., *Scientists' Evaluations of Research: The Biasing Effects of the Importance of the Topic*, 4 PSYCHOL. SCI. 322 (1993). Social scientists are also aware of the risks of motivated reasoning in interpreting empirical results. *See, e.g.*, Robert J. MacCoun, *Biases in the Interpretation and Use of Research Results*, 49 ANN. REV. PSYCHOL. 259 (1998).

217. Kenneth F. Schulz & David A. Grimes, *Blinding in Randomised Trials: Hiding Who Got What*, 359 LANCET 696, 696-97 (2002). *But see, e.g.*, Ted J. Kaptchuk, *The Double-Blind, Randomized, Placebo-Controlled Trial: Gold Standard or Golden Calf?*, 54 J. CLINICAL EPIDEMIOLOGY 541 (2001) (arguing that the process of blinding can itself produce forms of "masking bias").

litigation—parties necessarily know their own evidence—we can nevertheless obtain some of the same benefits by adopting a single-blind structure in which proceedings are bifurcated into pretrial and trial phases overseen by different judges.[218] Doing so will add another layer of cognitive insulation to the doctrinal fixes proposed above.

I propose a procedure in which pretrial motions, including rulings on the admissibility of evidence, are decided by a pretrial judge, and trial is overseen by a second judge, from whom records dealing with any evidence deemed inadmissible are sealed. The process would not be altogether different from the existing system, in which non-dispositive pretrial motions, including evidentiary motions, are often decided in the first instance by magistrate judges, subject to the district judge's review.[219] The significant differences from current practice would be, first, that one district judge would be appointed to conduct pretrial proceedings, including rulings on evidentiary motions or reviewing objections to the magistrate judge's rulings, and then, upon the pretrial judge's certification that the matter is ready for trial, it would be randomly assigned to a second district judge for trial; second, that the parties would be required to submit foreseeable evidentiary disputes at the pretrial stage, and the pretrial judge would be encouraged to rule on all motions in limine unless good cause exists why the motion cannot be resolved until trial; and third, that rulings on evidence deemed inadmissible would be sealed during trial and the parties would be forbidden to refer to such evidence before the trial court judge.[220] The trial judge simply would not know what evidence has been deemed inadmissible and therefore could not

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218. *Cf.* Guthrie et al., *supra* note 83, at 42 (recommending a "divided decision-making strategy" to "shield the ultimate adjudicator from various stimuli that are likely to induce intuitive, heuristic-based decision-making").

219. *See* 28 U.S.C. § 636(b)(1)(A) (2019) (magistrate judges empowered to decide non-dispositive motions on reference from district judge).

220. Events at trial might necessitate a re-evaluation of pretrial rulings. A defendant's testimony, for example, might open the door to introducing evidence of prior bad acts previously deemed inadmissible. *See* FED. R. EVID. 404(a)(2)(A); Michelson v. United States, 335 U.S. 469, 479 (1948) ("The price a defendant must pay for attempting to prove his good name is to throw open the entire subject which the law has kept closed for his benefit and to make himself vulnerable where the law otherwise shields him."). Parties would necessarily be permitted to move for reconsideration of pretrial evidentiary rulings on the ground that events at trial necessitate reappraisal; sanctions could deter frivolous or strategic use of this practice. At the same time, courts should be discouraged from the practice of treating rulings on motions in limine as presumptively provisional and thus failing to preserve issues for appeal unless the objecting party renews its objection at trial. *See, e.g.*, United States v. Gilbert, 229 F.3d 15, 17 (1st Cir. 2000). While it is true that some evidentiary issues cannot be definitively resolved until presented in a concrete context at trial, this should not prevent pretrial judges from issuing definitive rulings on matters in which the question of admissibility is relatively clear. Absent an explicit statement by the pretrial judge that a ruling is provisional, error should be deemed preserved on the basis of pretrial in limine rulings. *See* FED. R. EVID. 103(b) (claim of error preserved by court's "definitive" ruling "before or at trial").

be influenced by it.[221]

The most obvious objection to a blinding proposal is that it would increase the cost, and perhaps the duration, of litigation. While this is an empirical question on which further research would be necessary, there is at least some room for doubt whether this is the case. As Wistrich et al. point out, "[s]uch 'master calendar' systems are common in many state courts and were common in the federal courts until the late 1960s," at least in part because such systems are seen as *more* efficient than one in which a single judge oversees all proceedings in a case.[222] Moreover, some of the efficiency gains in having a single judge oversee the pretrial and trial process come from the very reliance on inadmissible information that gives rise to the problems of biased and motivated cognition. To the extent that such information constitutes an epistemic contaminant in the adjudicatory process, the ignorance of the blinded trial judge to inadmissible facts is a *feature* of the single-blind model.

Even assuming, *arguendo*, that the single-blind procedure would materially increase the cost of adjudication, this seems of minor concern in comparison to the benefit of eliminating the influence of prejudicial and inadmissible evidence at trial. Efficiency and affordability are important factors in the operation of a legal system, but they are not the only factors. Perhaps beyond all other social institutions, courts' reputation for unbiased decision making is central to their institutional identity and public legitimacy.[223] It is thus surprising that that reputation is largely grounded in the fiction of judges' immunity from the myriad biases and fallacies to which human cognition is susceptible rather than in more reliable methods of debiasing that have been implemented in other fields. Blinding is ubiquitous in situations where unbiased decision making is important.[224] In addition to the "gold standard" status of double-blind randomized

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221. While this section focuses on trial factfinding, blinding via the division of judicial duties may be valuable in other contexts as well, such as the adjudication of summary judgment motions, judicial participation in settlement conferences, and appellate review. *See, e.g.*, Harold Baer, Jr., *History, Process, and a Role for Judges in Mediating Their Own Cases*, 58 N.Y.U. ANN. SURV. AM. L. 131, 144-47 (2001) (discussing ethical concerns in judicial participation in settlement negotiations).

222. Wistrich et al., *supra* note 141, at 1326; *cf.* Cal. R. Ct. 8.1, Cty. of San Francisco Local Rules of Court (2017), https://www.sfsuperiorcourt.org/sites/default/files/images/Uniform%20Local%20Rules%20of%20Court%20-%20July%201%2C%202017%20FINAL.pdf?1559313471872 [https://perma.cc/PTG5-FCF3] (identifying pretrial matters to be heard in the Law and Motion Department). Wistrich et al. suggest separating judges' "managerial" and "adjudicative" roles by assigning the pretrial and trial phases of each case to different judges. Wistrich et al., *supra* note 141, at 1325-27. Although the authors do not draw comparisons to the natural sciences, their proposal is similar to single-blind adjudication, the major difference being that Wistrich et al. do not propose any formal blinding mechanism; their proposal would presumably leave the record of pretrial proceedings and the nature of evidence deemed inadmissible open to the trial judge.

223. *See supra* Part IV.A.

224. *See* Robertson, *supra* note 64, at 206 (citing examples of blinding as a debiasing

controlled trials in the experimental natural sciences,[225] we might also include the anonymized review of manuscripts by academic journals,[226] the establishment of blind trusts for the management of public officials' assets,[227] the grading of law school exams,[228] and even orchestra auditions.[229] Is the provision of legal justice a less important process than others in which blinding is routinely implemented? I think not, but the doctrines of epistemic exceptionalism, with their "presumptions" that judges are immune to the cognitive effects to which all other humans are susceptible,[230] have thus far prevented the legal system from implementing prophylactic measures that have proven effective in other contexts.

b. Revise FRE 706 to "nudge" courts to appoint independent experts.—Legal doctrines and discretionary practices regarding gatekeeping and FRE 706 appointments may indicate manifestations of the Dunning-Kruger effect.[231] Judges are laypersons in the domains of expertise in which the expert witnesses testify. They therefore can be expected to overestimate their ability to comprehend and apply expert testimony to the resolution of legal disputes without assistance.[232]

In other work, I have proposed reforming the epistemic system of the courts more radically, reallocating decision-making authority to evaluate expert witnesses' qualifications and to decide gatekeeping motions to "scientific

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mechanism). *See generally* BLINDING AS A SOLUTION TO BIAS (Christopher T. Robertson & Aaron S. Kesselheim eds., 2016) [hereinafter BLINDING] (discussing utility and ethical concerns of blinding in a variety of contexts).

225. *See* Schulz & Grimes, *supra* note 217.

226. *See* Emily A. Largent and Richard T. Snodgrass, *Blind Peer Review by Academic Journals*, *in* BLINDING, *supra* note 224, at 75-93; Nancy McCormack, *Peer Review and Legal Publishing: What Law Librarians Need to Know About Open, Single-Blind, and Double-Blind Reviewing,* 101 LAW LIBR. J. 59 (2009).

227. *See* Perry A. Pirsch, *Blind Trusts as a Model for Campaign Finance Reform*, 4 WM. & MARY POL'Y REV. 212, 223-25 (2012).

228. *See* Paul D. Carrington, *One Law: The Role of Legal Education in the Opening of the Legal Profession Since 1776*, 44 FLA. L. REV. 501, 565 (1992).

229. *See, e.g.*, Curt Rice, *How Blind Auditions Help Orchestras to Eliminate Gender Bias*, GUARDIAN (Oct. 14, 2013), https://www.theguardian.com/women-in-leadership/2013/oct/14/blind-auditions-orchestras-gender-bias [https://perma.cc/366M-FKDP].

230. *See supra* Part II.A.

231. *See supra* note 98.

232. Indeed, the judicial respondents to Cecil and Willgang's study of FRE 706 appointment practices noted that "[t]he opportunity to appoint an expert is often hindered by failure to recognize the need for such assistance until the eve of trial." CECIL & WILLGING, *supra* note 63, at 5. Adversarial scruples alone cannot fully explain these results; Dobbins et al.'s analysis of federal district judges' survey responses found that judges were also unlikely to appoint a special master to prepare a report for the court on issues relating to scientific evidence (77.9% of judges responded that they would never do so) or appoint a scientific advisor to educate the court (90.7% would never do so). Dobbin et al., *supra* note 63, at 9.

adjuncts" with expertise in the relevant scientific domain.[233] But even if that proposal is not implemented, we can mitigate the effects of epistemic exceptionalism by encouraging judges to appoint neutral experts pursuant to FRE 706. Although judges currently have that authority and would likely benefit from the advice of a neutral scientific advisor or third-party witness in many cases, they rarely exercise their discretion to appoint such experts.[234] "Nudging" judges toward a more effective process may yield benefits.[235] FRE 706 could be revised to provide that, in cases involving expert testimony, the parties shall jointly prepare a list of candidates to be appointed by the court as an independent expert; the court shall then select and appoint one of the parties' candidates unless it concludes in a written order that doing so is not in the interests of justice. Thus, the default option would be that an independent expert is appointed. Judges would retain discretion not to appoint an FRE 706 expert but would be required to articulate reasons why such an appointment would not be helpful in a particular case. In addition to resulting in more independent experts being appointed, the act of articulating reasons why an expert is unnecessary might mitigate the Dunning-Kruger effect by compelling judges to consider their need for independent expert advice about the relevant domain of expertise.[236]

Christopher Robertson raises several practical objections to widespread use of FRE 706 experts. Aside from a judicial culture reticent to overshadow partisan experts with court-appointed ones,[237] the process of identifying and appointing a qualified independent expert is a time-consuming one for which judges may be unprepared,[238] and mandating the appointment of FRE 706 experts is politically infeasible.[239] The proposal to nudge, rather than require, the use of independent experts blunts those objections.[240] Changing the default option to appointing an independent expert gives judges some cover against party objections to the appointment of independent experts and may assuage their own adversarial scruples. The parties, rather than the judge, would be required to prepare the

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233. Dillon, *supra* note 67.

234. *See supra* note 63.

235. *See* RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS (2009).

236. *See supra* note 98.

237. Robertson, *supra* note 64, at 199-200; *cf.* Joe S. Cecil & Thomas E. Willging, *Accepting* Daubert's *Invitation: Defining a Role for Court-Appointed Experts*, 43 EMORY L. J. 995, 1005, 1018-19 (1994) (noting judges' view that appointed experts are incompatible with the adversarial system and parties' objections to judicially-appointed experts as common reasons given for courts' reluctance to appoint experts more frequently).

238. Robertson, *supra* note 64, at 200.

239. *Id*. at 201.

240. Robertson's own proposal, to adopt a regime of "blind" partisan experts, is an interesting one that has generated promising results in empirical testing. *See* Christopher T. Robertson & David V. Yokum, *The Effect of Blinded Experts on Juror Verdicts*, 9 J. EMPIRICAL LEGAL STUD. 765 (2012); Robertson, *supra* note 64. The proposals are not incompatible; a system of blind partisan experts and FRE 706 nudges might well be preferable to either option individually.

initial list of candidates, and we may anticipate that, as FRE 706 appointments become more common, a class of repeat-player independent experts will emerge such that the appointment process becomes routine. Finally, the shift to appointing independent experts as a default position, subject to judicial override, is a less radical change to current practice than a full mandate and may be more politically palatable.

3. Top Tier: Instilling an Institutional Culture of Epistemic Humility.—Changes to the formal process of judicial decision making are relatively straightforward, and most of the specific manifestations of epistemic exceptionalism identified in Part III can be corrected with doctrinal or institutional reforms. Unless the underlying causes of epistemic exceptionalism are addressed, however, new manifestations will continue to sprout, hydra-like, from the institutionalized belief in judges' exceptional competence and objectivity. A complete solution to the problem will require a shift in courts' perspectives toward an awareness of judges' cognitive limitations and a greater appreciation for the usefulness of evidentiary rules in guarding against the effects of unconscious bias and cognitive illusions. I refer to this attitude generally as *epistemic humility*.[241] Humility in this sense is not a supererogatory virtue, nor an exercise in false modesty. It is a recognition, operationalized in doctrine and discretionary practice, that the legal system works best when its procedures are grounded in a realistic, empirically-informed conception of human cognition and its limitations. Epistemic humility is associated with openness, curiosity, tolerance of ambiguity, and low dogmatism—all valuable characteristics to effective judging.[242] Individuals displaying epistemic humility are also "more attentive to the evidentiary basis of their beliefs" and "more clearly distinguish[] strong from weak arguments . . . those that were based on scientific evidence and expert testimony from those that were based on trivial considerations, anecdotal evidence, or recommendations by laypeople."[243]

Changing the institutional culture of the courts to one of greater epistemic humility will not be easy, in part because epistemic exceptionalism is a rational response to courts' institutional incentives. As noted above, the principal cause of epistemic exceptionalism is not personal hubris on the part of individual judges, but rather an institutionalized commitment to the myth of judicial infallibility on the part of courts as collective epistemic agents.[244] This commitment is motivated by the necessity of courts, in order to maintain the

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241. *See* Mark R. Leary et al., *Cognitive and Interpersonal Features of Intellectual Humility*, 43 PERS. & SOC. PSYCHOL. BULL. 793, 793 (2017) (defining "intellectual humility" as "recognizing that a particular personal belief may be fallible, accompanied by an appropriate attentiveness to limitations in the evidentiary basis of that belief and to one's own limitations in obtaining and evaluating relevant information"). The psychology literature generally uses the phrase "intellectual humility"; I use "epistemic humility" synonymously to emphasize the relation of humility to the production of legal knowledge.

242. *Id*. at 796-97.

243. *Id*. at 808.

244. *See supra* Part IV.A.

perception of apolitical legitimacy upon which their institutional authority relies, to maintain the pretense of perfect impartiality and universal expertise; to deny, insofar as possible, that judicial cognition resembles human cognition.[245] Those incentives are rooted deeply in the institutional structure of the judiciary and can be regarded as more or less permanent.[246] In that regard, the judicial culture of epistemic exceptionalism can itself be conceived as an instance of motivated cognition—courts' institutional authority, political capital, and judges' professional identities all turn on the belief that judicial decision making is immune to the cognitive illusions and biases to which laypersons are susceptible. Pressures toward epistemic exceptionalism will always exist in an institution that depends on its reputation for disinterestedness as a source of political authority.

How, then, should an institutional culture of epistemic humility be fostered? Persuasion is likely more effective than prescription; if a culture of epistemic humility is to take root, judges must *understand* the mechanisms of cognitive error and the value of rules intended to mitigate them.[247] They also must come to appreciate the contexts in which their legal training and general intelligence give them a meaningful epistemic advantage over lay jurors and, crucially, the contexts in which they do not. If, as proposed above, the rules of evidence and procedure are revised to state more explicitly that they apply with equal force to pretrial proceedings and bench trial as to jury trials, or to encourage judges to appoint independent experts under FRE 706, advisory committee notes should summarize the relevant psychological research and explain why cognitive safeguards are necessary for judges.[248] Judicial training should be updated to include research on the cognitive effects discussed in Part II, with the goal of convincing judges that general intelligence, expertise in law, and a conscious commitment to neutrality are inadequate to protect against all forms of cognitive error.[249] Only when judges themselves appreciate the value of procedural

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245. *See* Shapiro, *supra* note 194, at 155-56.

246. *See* THE FEDERALIST NO. 78, *supra* note 190 (Alexander Hamilton).

247. *See* Guthrie et al., *supra* note 83, at 822-25 (arguing that judges can mitigate the effects of cognitive illusions by considering multiple perspectives, limiting heuristics to normatively appropriate circumstances, and reducing reliance on judgments that are likely to be influenced by cognitive illusions); Sood, *Motivated Cognition*, *supra* note 83, at 320 (suggesting that "especially in legal decision-making contexts, in which people strive to reach accurate and lawful conclusions, the key to reining in motivated cognition might lie in drawing attention to inadvertently and inappropriately motivating factors").

248. Cognitive psychology shows that "even indirectly raising consciousness about legally irrelevant but potentially motivating factors can go a significant way toward curtailing the influence of those factors." Sood, *Applying Empirical Psychology*, *supra* note 100, at 306 (citing Avani Mehta Sood & John M. Durley, Essay, *The Plasticity of Harm in the Service of Criminalization Goals*, 100 CALIF. L. REV. 1313, 1342-45 (2012); *see* Janice Nadler, *Blaming as a Social Process*, 75 LAW & CONTEMP. PROBS. 25, 25-26 (2012); Sood, *Motivated Cognition*, *supra* note 83, at 320-22.

249. Sood suggests that courts adopt the practice of making explicit, verbal awareness-generating statements about decision makers' susceptibility to motivated cognition, either in

protections against cognitive error can we hope for manifestations of epistemic exceptionalism to significantly decline.[250]

V. CONCLUSION

Having begun this Article with a reference to Greek mythology, it is appropriate to end it on a note of Roman history. Roman generals returning home in victory were honored with elaborate triumphal processions in which a public slave traditionally held a golden crown above the general's head while repeating, "Look behind you. Remember you are a man."[251] Federal judges will never be mistaken for triumphant generals, but they are subject to the same temptations to forget the limits of their own abilities.[252] In this they are eminently human; the tendency to overestimate one's competence and objectivity relative to others is nearly universal. It is for this reason, among others, that the law has imposed cognitive guardrails in the Federal Rules of Evidence. The FRE exist in part to avoid the cognitive pitfalls that centuries of experience revealed even before modern psychology articulated such concepts as "cognitive illusions," "identity-protective cognition," and "implicit bias." These solutions are imperfect, but they go some distance toward mitigating sources of cognitive bias in legal decision making.

The problem of epistemic exceptionalism arises when judges exempt themselves from the guidelines the law has put in place to steer legal cognition away from these epistemic precipices, or when they preempt juries' factfinding

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instructions for juries or in court before judges' own rulings on motions and bench trials. Sood, *Applying Empirical Psychology*, *supra* note 100, at 307.

250. Even under the most favorable conditions, judicial awareness will not eliminate the temptation of epistemic exceptionalism. Some cognitive effects can be mitigated by deliberative System 2 effort, but others persist even in the face of conscious efforts to neutralize them. *See, e.g.*, Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: The Problem of Market Manipulation*, 74 N.Y.U. L. REV. 630, 633 (1999) ("[C]ognitive illusions . . . are not limited to the uneducated or unintelligent, and they are not readily capable of being unlearned. Instead, they affect us all with uncanny consistency and unflappable persistence."); Timothy D. Wilson et al., *supra* note 94, at 397 (finding that anchoring effects were not diminished by forewarning study participants about anchoring). Moreover, some debiasing interventions risk creating unintended, counterproductive results "by eliciting psychological denial or rejection . . . [or prompting] 'overcorrection' that unfairly skews outcomes in the opposite direction." Sood, *Applying Empirical Psychology*, *supra* note 100, at 307-08.

251. MARY BEARD, THE ROMAN TRIUMPH 85 (2009).

252. The Roman insight that public acclaim and political authority can be associated with cognitive impairment has been borne out by a robust literature on the effects of political power on behavior and cognition. *See, e.g.*, Dacher Keltner et al., *Power, Approach, and Inhibition*, 110 PSYCHOL. REV. 265, 279 (2003) (finding that people feeling powerful "act in a more disinhibited and at times counternormative fashion"); David Owen & Jonathan Davidson, *Hubris Syndrome: An Acquired Personality Disorder?*, 132 BRAIN 1396, 1397-99 (2009) (proposing diagnostic criteria for "hubris syndrome").

prerogatives on the basis of spurious claims of domain-general epistemic superiority. While we need not doubt that federal judges are highly intelligent and conscientiously strive for impartiality, they are still human; they are necessarily ignorant of the scope of their own ignorance in matters outside their expertise, and they are susceptible, to a substantial if not identical degree, to the cognitive pitfalls that beset jurors. By disregarding the psychological insights undergirding the FRE, judges deprive themselves of valuable safeguards against cognitive error and greatly increase the risk of biased or irrational decision making.

This Article has not attempted to survey the full scope of the problem or to detail all the manifestations of epistemic exceptionalism. The specific manifestations that the Article identifies are problematic in themselves and should be addressed. In most cases, the solutions are simple—the FRE should apply to pretrial and bench trial factfinding with the same force as jury trials, courts' incentives should be changed to encourage the appointment of independent expert witnesses, and complexity exceptions to the Seventh Amendment should be rejected where the alternative is factfinding by a generalist judge. But these are only examples of a broader phenomenon, one rooted ultimately in the judicial psyche. Only by instilling a culture of epistemic humility in the judiciary in combination with more robust procedural safeguards can we hope to finally end the distortions to the legal process caused by epistemic exceptionalism.