

Judicial Policing of Patent Damages Experts

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The calculation of patent damages such as a reasonable royalty presents significant challenges for which the use of expert testimony is predictable, if not unavoidably vital. Struggles to employ and at the same time guide and restrain expert testimony on reasonable royalty damages have become prominent in the last two decades, in substantial part because of the rise of patent assertion entities (PAEs) that have intensified stresses on the United States patent system. Patent law’s peculiarly centralized court of appeals, the United States Court of Appeals for the Federal Circuit, has responded to such stresses by limiting the admissibility or cognizable sufficiency of expert evidence on reasonable royalties for patent infringement. Although seemingly more aggressive than the general appellate norm, this appellate-level activity has so far appeared in line with general understandings of the proper judicial role in regulating expert testimony and reliance on it. A strict understanding of the Federal Circuit’s rule of apportionment based on the smallest salable patent-practicing unit (SSPPU) might lead to an undue downward distortion of reasonable royalty awards under certain circumstances, but there currently seems enough flex in the articulation of the rule to accommodate corrective adjustments. Although imperfect, the current approach to regulating expert testimony on patent damages seems to embody at least a plausibly satisfactory form of “muddling through,” approximating the demands for reasoned analysis that courts commonly impose on the work of expert administrative agencies.

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Introduction

Modern litigation commonly relies on experts to help with the resolution of questions of legal liability or of justified forms and levels of legal relief.¹ Expert evidence has become crucial to extending the capability of courts to offer just and effective relief, enabling courts to use scientific knowledge to follow complicated paths of causation to a legally liable source;² helping to establish the existence of such otherwise ethereal conditions as a “likelihood of confusion” from a competitor’s use of a brand name or appearance resembling that employed by a trademark holder; and making possible the assessment of counterfactual damages such as lost profits that a right holder would have made absent an adjudged legal violation or the value of a reasonable royalty that a patent infringer’s failure to negotiate a license denied a patent holder.³

In the United States as in other countries, however, a key concern is that such expert evidence has the potential to do harm as well as good.⁴ Reliance on experts can enable courts to make reasoned and relatively precise determinations on matters of fact where they would otherwise be only able to engage in speculative guesswork, as in assessing the profits lost by a new business.⁵ But there is the natural question of whether such reliance is well placed: there is the ever-present possibility that expert evidence could be contaminated by error or bias,⁶ and the common presence of competing party

1. Cf. Margaret A. Berger, *The Admissibility of Expert Testimony*, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 11, 12 (3d ed. 2011) (“[E]xpert testimony has become increasingly essential in a wide variety of litigated cases . . .”).

2. Roger I. Abrams et al., *Stillborn Enterprises: Calculating Expectation Damages Using Forensic Economics*, 57 OHIO ST. L.J. 809, 812 (1996) (“Courts increasingly use statistical tools in cases of alleged employment discrimination, antitrust violations, and similar circumstances where data patterns must be analyzed.”).

3. See generally Christine P. Bartholomew, *Death by Daubert: The Continued Attack on Private Antitrust*, 35 CARDOZO L. REV. 2147, 2150 (2014) (contending that early relevance-and-reliability review for admissibility of expert testimony jeopardizes antitrust enforcement through private class actions).

4. See DÉIRDRE DWYER, *THE JUDICIAL ASSESSMENT OF EXPERT EVIDENCE* 1 (2008) (“The ability of the courts to assess expert evidence is a cause for concern prevalent in western legal systems today.”).

5. Abrams et al., *supra* note 2, at 822 (“Testimony by forensic experts in the stillborn enterprise case would increase the reliability of estimates for the sales, costs, and operating performance variables to within acceptable ranges.”); cf. John M. Golden, *Reasonable Certainty in Contract and Patent Damages*, 30 HARV. J.L. & TECH. 257, 269 (2017) [hereinafter Golden, *Reasonable Certainty*] (noting that, over the course of time, “many courts relaxed their demands for reasonable certainty [in proving damages] and progressively took the steps of: (1) abandoning bars on the award of damages such as the ‘new business rule,’ [and] (2) recognizing the capacity of statistical or other expert evidence to support inferences required for calculation of a damages amount”).

6. See DWYER, *supra* note 4, at 1 (observing that concern with “[t]he ability of the courts to assess expert evidence” commonly manifests itself in concern with “expert bias”); KENNETH R.

experts in the United States' adversarial system⁷ can lead to a "battle of the experts"⁸ in the wake of which generalist judges or juries must grope rather "incompeten[tly]," in Judge Learned Hand's words, with the question of how to decide "between two [expert] statements each founded upon an experience confessedly foreign in kind to their own."⁹ Under such circumstances, questions about how and when to rely on expert evidence can effectively turn into questions of "[w]hose knowledge should count as valid science," rather than more straightforward questions of whose information and analysis better advances a well-defined task of neutral fact-finding.¹⁰

This Article focuses primarily on the application of expert evidence to a subset of cases involving the problem of assessing reasonable royalty damages when a jury acts as fact finder. But the Article connects and compares developments in this subset of cases to court practice in cases involving use of expert evidence more broadly, whether to establish other forms of intellectual property (IP) damages or to establish damages or liability more generally. More specifically, the Article focuses on the question of how judges police jury decision-making on damages in light of expert evidence through two basic mechanisms: judicial gatekeeping of the admissibility of such evidence for relevance and reliability under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*¹¹ and judicial review of whether damages verdicts enjoy adequate evidentiary support under Rule 50 of the Federal Rules of Civil Procedure. Rule 50 allows judges to decide certain questions, notwithstanding contrary jury verdicts, "as a matter of law, to order new trials,"¹² or as an alternative to an unconditional order of a new trial, to offer, in accordance with the doctrine of remittitur, a reduced damages award to a patentee as an alternative to granting an adjudged infringer's motion for a

FOSTER & PETER W. HUBER, *JUDGING SCIENCE: SCIENTIFIC KNOWLEDGE AND THE FEDERAL COURTS* 235 (1997) (contending that "scientists are notoriously prone to underestimate the errors in their studies and to overestimate the reliability of their results").

7. Cf. Jack B. Weinstein, *Improving Expert Testimony*, 20 U. RICH. L. REV. 473, 482 (1986) ("An expert can be found to testify to the truth of almost any factual theory, no matter how frivolous . . .").

8. See, e.g., David G. Owen, *A Decade of Daubert*, 80 DENV. U. L. REV. 345, 345 (2002) ("Products liability litigation, involving the inner workings of science and technology, often resolves into a 'battle of the experts.'").

9. Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 54 (1902) ("It is just because [jurors] are incompetent for such a task that the expert is necessary at all.").

10. SHEILA JASANOFF, *SCIENCE AT THE BAR: LAW, SCIENCE, AND TECHNOLOGY IN AMERICA* 19 (1995).

11. 509 U.S. 579 (1993).

12. FED. R. CIV. P. 50(a)-(b) (providing that a court may "order a new trial" or "direct the entry of judgment as a matter of law" where "a party has been fully heard on an issue during a jury trial and the court finds that a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue").

new trial.¹³ Of course, courts have other devices, such as jury instructions¹⁴ and the capacity to award summary judgment,¹⁵ that can also guide or limit processes of jury decision-making. For purposes here, however, the focus is on the direct regulation of evidentiary inputs on matters to be placed before a jury and the direct review of jury verdicts.

In the context of reasonable royalty damages in patent law, the United States Court of Appeals for the Federal Circuit has deployed both approaches to constrain the allowed evidentiary bases for reasonable royalty damages that are properly sustainable by the courts. Through a series of decisions starting in the latter half of the twenty-first century's first decade, the Federal Circuit overturned individual trial decisions in ways that not only highlighted trial judges' responsibility to use these mechanisms to police jury decision-making, but also, in arguable tension with the general emphasis on such policing being a matter of trial judge discretion,¹⁶ imposed rules for the forms of evidence that courts could properly admit.

On the whole, the Federal Circuit's actions seem somewhat more aggressive than the general norm for appellate policing of such evidentiary matters by the regional circuits, but the Federal Circuit's actions do not generally seem terribly exceptional either.¹⁷ The Federal Circuit has responded to legitimate concerns about possibilities for excessive looseness and arbitrariness in awards of reasonable royalties that can amount to hundreds of millions of dollars¹⁸ and that have become more central to business models after the emergence of patent assertion entities (PAEs)—entities whose business focuses on monetizing patents through licensing or

13. See Suja A. Thomas, *Re-Examining the Constitutionality of Remittitur Under the Seventh Amendment*, 64 OHIO ST. L.J. 731, 731–32 (2003) (discussing “the practice of remittitur” in the federal courts); cf. *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1325 (Fed. Cir. 2016) (recounting the district court’s grant of remittitur, “reducing the damages from \$9,641,206 to \$3,775,418”).

14. See FED. R. CIV. P. 51(b)(3) (providing that a trial judge “may instruct the jury at any time before the jury is discharged”).

15. See *id.* 56(a) (“The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.”).

16. See, e.g., Bartholomew, *supra* note 3, at 2150 (“Courts enjoy tremendous discretion in evaluating the admissibility of expert testimony.”).

17. See *infra* text accompanying notes 83–94.

18. See, e.g., *Carnegie Mellon Univ. v. Marvell Tech. Grp., Ltd.*, 807 F.3d 1283, 1288 (Fed. Cir. 2015) (affirming “judgment to the extent of \$278,406,045.50 in past royalties . . . plus an amount to be calculated on remand that brings that figure forward to the time of judgment”).

litigation¹⁹—as primary players in the patent litigation ecosystem.²⁰ Notably, at least one rule developed by the Federal Circuit, a rule prescribing that the base for calculation of a reasonable royalty not exceed the estimated value of the “smallest salable patent-practicing unit” (SSPPU),²¹ can, if too strictly understood,²² be a source of error or bias itself even if its prescription is advisable in the bulk of cases for which it is invoked.²³ There seems, however, to be room for courts to approach the rule with a less strict understanding.²⁴

This Article proceeds as follows. Part I describes general principles for the admissibility of expert testimony or the ordering of a new trial or judgment as a matter of law. Part II describes issues in the awarding of patent remedies and the Federal Circuit’s responses to such problems in relation to reasonable royalty awards. The basic conclusion is that, although imperfect, the Federal Circuit’s approach to regulating the use of expert evidence to support reasonable royalty awards comports with relevant Federal Rules and approaches to their implementation in other legal areas. Further, with at least partial support through an analogy to demands for reasoned decision-making in administrative law, the Federal Circuit’s approach to policing expert evidence on damages seems plausibly desirable as a way of limiting potential for arbitrariness. In this instance, the semi-specialized Federal Circuit seems largely to have avoided the adoption of overly rigid general rules that make the court’s approach an outlier compared to those of other circuits and that prevent context-sensitive adjustment, whether through the evidence and

19. John M. Golden & Karen E. Sandrik, *A Restitution Perspective on Reasonable Royalties*, 36 REV. LITIG. 335, 339–40 (2017) (describing PAEs as entities “whose core—and commonly sole—business is that of acquiring and licensing or otherwise enforcing patent rights”).

20. *See, e.g.*, *Carnegie Mellon Univ. v. Marvell Tech. Group, Ltd.*, Civ. No. 09-290, 2012 WL 3686748, at *1–2 (W.D. Pa. Aug. 24, 2012) (observing that “[b]ecause [Carnegie Mellon University (CMU)] does not manufacture or sell products that practice the claimed methods, it is not entitled to lost profits” and “CMU’s only recourse is a reasonable royalty”); *cf.* PRICEWATERHOUSECOOPERS INT’L LTD., 2018 PATENT LITIGATION STUDY 9 fig.11 (reporting that, at \$14.8 million, median damages awards for non-practicing entities (NPEs), a category substantially coincident with that of PAEs, were more than three times those for practicing entities (PEs) for the five-year period from 2013 to 2017).

21. *Commonwealth Sci. & Indus. Research Org. v. Cisco Sys., Inc.*, 809 F.3d 1295, 1302 (Fed. Cir. 2015) (“[T]he smallest salable patent-practicing unit principle provides that, where a damages model apportionments from a royalty base, the model should use the smallest salable patent-practicing unit as the base.”).

22. Sometimes the Federal Circuit has suggested that there might be some flex in the application of a rule such as the SSPPU principle by stressing recognition “that each case presents unique facts” and that such “principles [are] to aid courts in determining when an expert’s [analysis] is reliable.” *Id.*

23. *See infra* text accompanying notes 101–102.

24. *See infra* text accompanying notes 98–102.

reasoning provided by expert witnesses or otherwise, in light of the peculiar facts of an individual case.²⁵

I. General Principles for Policing Expert Evidence

On the front end of the trial process, judges are charged with screening expert testimony to ensure its relevance and reliability.²⁶ After the admission of such evidence, a judge can still determine that it, in combination with other evidence, does not provide sufficient ground as a matter of law to justify a particular jury verdict.²⁷ At the appellate level, the distinction between these two mechanisms can be blurred as a determination by the appellate court that certain expert evidence cannot support a jury verdict can effectively substitute for a declaration that the evidence should not have been admitted altogether.²⁸ The mechanisms may also work in tandem, with an appellate court's determination that certain expert testimony was improperly admitted being followed by a holding that the remaining "properly admitted evidence [was] insufficient to support the verdict."²⁹

A proliferation of the use of expert testimony over the past few decades has placed greater pressure on these regulating mechanisms.³⁰ The following sections describe briefly how the mechanisms operate in practice.

A. Gatekeeping of the Admissibility of Expert Testimony

In 1993, the United States Supreme Court determined in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*³¹ that, under the Federal Rules of Evidence, "the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable."³² Six years later, in *Kumho Tire Co. v. Carmichael*,³³ the Court clarified that this gatekeeping duty extends to all expert testimony but also emphasized that "the test of reliability is 'flexible,'" with "the law grant[ing] a district court the same

25. See John M. Golden, *Discretion in Patent Damages*, 37 REV. LITIG. 287, 323 (2018) ("Allocation of such a bounded but still substantial capacity for district court innovation is prudent in light of limited knowledge about best practices and, more generally, about how further details of damages law should develop.").

26. See *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 529 (6th Cir. 2008) (describing the Federal Rules of Evidence as requiring that expert testimony be both relevant and reliable).

27. See *supra* note 12 and accompanying text.

28. Cf. 1 MCCORMICK ON EVIDENCE § 13, at 96 (Kenneth S. Broun et al. eds., 7th ed. 2013) (noting the rarity of reversals of trial-judge decisions on the admissibility of expert testimony).

29. *Weisgram v. Marley Co.*, 528 U.S. 440, 456 (2000).

30. See MCCORMICK ON EVIDENCE, *supra* note 28, at 90 ("In the past three decades, the use of expert witnesses has skyrocketed.").

31. 509 U.S. 579 (1993).

32. *Id.* at 589.

33. 526 U.S. 137 (1999).

broad latitude when it decides how to determine reliability as it enjoys in respect to its ultimate reliability determination.”³⁴

The Court’s rulings in *Daubert* and *Kumho* were essentially codified in the year 2000 through congressional enactment of an amended version of Rule 702 of the Federal Rules of Evidence, which, after further stylistic amendment in 2011, reads as follows:

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 of the case.³⁵

The “help the trier of fact” prong of this rule is commonly viewed as implementing the requirement of relevance,³⁶ whereas the “sufficient facts or data,” “reliable principles and methods,” and “reliabl[e] appli[cation]” prongs implement the requirement of reliability.³⁷ An additional requirement appearing in Rule 702 is the requirement that the relevant witness be “qualified as an expert by knowledge, skill, experience, training, or education.”³⁸ Because economic experts on damages with substantial economics or accounting backgrounds are the focal points of this Article’s concern with expert testimony on damages, the qualification prong is of essentially little interest here: these experts will generally satisfy that prong

34. *Id.* at 141–42 (emphasis omitted) (citation omitted); see also MCCORMICK ON EVIDENCE, *supra* note 28, at 100–01 (discussing the Court’s holdings in *Kumho*). Despite this flexibility in the operations of the trial court, the Supreme Court in the following year emphasized “the exacting standards of reliability [that expert] evidence must meet.” *Weisgram*, 528 U.S. at 455.

35. FED. R. EVID. 702.

36. 1 DAVID L. FAIGMAN ET AL., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY § 1:11 (2019), Westlaw MODSCIEVID (“Focusing on the language ‘help the trier of fact,’ many courts and commentators characterized this rule as a ‘relevancy test.’”).

37. See *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 529 (6th Cir. 2008). Judge Cole’s opinion for the court stated:

Rule 702 guides the trial court by providing general standards to assess reliability: whether the testimony is based upon “sufficient facts or data,” whether the testimony is the “product of reliable principles and methods,” and whether the expert “has applied the principles and methods reliably to the facts of the case.”

Id.

38. See *supra* text accompanying note 35.

with ease.³⁹ Further, because the testimony of such experts on reasonable royalty damages typically involves technical financial calculations and other considerations beyond the ordinary juror's experience, and because this testimony is generally specifically tied to the proffering of a specific number for damages, this testimony will most likely pass the concern of being within the general realm of testimony that can help a jury⁴⁰—at least to the extent that concern can be disentangled from concerns of reliability.⁴¹ But within the “helping” prong, there is commonly considered to be the question of “fit,” which centers on questions of whether an expert's methodology or evidence are properly applied to help with the relevant issue in the specific context of the facts on hand.⁴² This question of fitness and the additional question of reliability are the Rule 702 questions of principal interest in this Article.

Courts have repeatedly deployed the fitness and reliability requirements to reject expert testimony on financial matters. Courts sometimes apply to examination of such expert testimony the four specific but nonexclusive factors that *Daubert* listed as commonly applicable bases for assessing the admissibility of scientific testimony: (1) testability or actual past testing of “a theory or technique” employed by the expert; (2) “whether the theory or technique has been subjected to peer review and publication”; (3) “the known or potential rate of error” of “a particular scientific technique”; and (4) whether the theory or technique enjoys “[w]idespread acceptance” in the relevant expert community or, despite being widely known, “has been able to attract only minimal support within the community.”⁴³ In applying such factors, courts have held economists' expert testimony inadmissible on methodological grounds such as “fail[ure] to consider other possible variables in the economic analysis,” and courts have been “particularly critical of testimony tailored specifically toward litigation, without any evidence of prior testing or acceptance within the relevant discipline.”⁴⁴

39. See DAVID H. KAYE ET AL., *THE NEW WIGMORE: A TREATISE ON EVIDENCE—EXPERT EVIDENCE* § 3.1.1 (2d ed. 2020), Westlaw WIGVEVEE (“Standards for qualifying experts are liberal and depend on the relevant field.”).

40. FAIGMAN ET AL., *supra* note 36, § 1.11 (“As a general matter, the initial consideration given [Rule 702's ‘help the trier of fact’] language is whether the testimony will concern matters that fall outside jurors' experience.”).

41. One set of commentators has noted: “Overlap is inevitable not only in the reliability gates but with all the [admissibility] gates: expert evidence that is not reliable necessarily is neither helpful nor relevant . . .” Harvey Brown & Melissa Davis, *Eight Gates for Expert Witnesses: Fifteen Years Later*, 52 HOUS. L. REV. 1, 8 (2014).

42. FAIGMAN ET AL., *supra* note 36, § 1.11 (describing a further question of “fit,” “whether the expert's opinions relate to some specific issues in dispute” and “whether the research basis for the expert's opinion generalizes to the legal issues in dispute”).

43. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 593–94 (1992) (quoting *United States v. Downing*, 753 F.2d 1224, 1238 (3d Cir. 1985)).

44. Cecil C. Kuhne, III, *Excluding Testimony of Financial Experts in Federal Litigation: How Far Do the Daubert Standards Extend?*, 18 ST. JOHN'S J. LEGAL COMMENT. 525, 536 (2003).

Moreover, courts have applied the fitness requirement to declare expert testimony based on an economic model to be inadmissible because the model failed to take account of specific, pertinent circumstances—in other words, it was too abstracted from the particular context and questions of the individual case.⁴⁵ Some commentators have suggested that “judges seem more willing to engage economics critically than they do many other areas of expertise,” with “judges critically evaluating whether economics expert witnesses are making faulty assumptions, have an insufficient factual basis, are applying faulty analyses, or simply are not able to add to the jury’s ability to evaluate the damages in a case.”⁴⁶

B. *Ordering a New Trial or Judgment as a Matter of Law*

The second regulatory device of primary concern here is the judicial capacity under Rule 50 of the Federal Rules of Civil Procedure to overturn, or prevent occurrence of, a jury verdict, whether by awarding pretrial or posttrial judgment as a matter of law (JMOL) or by granting a motion for a new trial.⁴⁷ As indicated by the language of Rule 50 positing the relevant question as one of whether “a reasonable jury would . . . have a legally sufficient evidentiary basis” to make a particular determination, the standard for ordering JMOL is a demanding one, commonly described as requiring a holding that “no reasonable juror” could come to the challenged conclusion.⁴⁸ Alternatively, but apparently equivalently, courts sometimes describe JMOL as forbidden where a jury verdict “is supported by substantial evidence, which is evidence adequate to support the jury’s conclusion, even if it is also possible to draw a contrary conclusion.”⁴⁹ The Court of Appeals for the Ninth Circuit has stated that, in reviewing a jury’s damages verdict under the

45. *Id.* at 539 (“Even though a theory meets certain *Daubert* factors (such as testing, peer review and publication, known or potential error rate, and general acceptance), it should not be admitted at trial if it does not apply to the facts at hand.”).

46. 5 FAIGMAN ET AL., *supra* note 36, § 43.1.

47. FED. R. CIV. P. 50(a)–(b) (describing judicial capacity to order judgment as a matter of law or a new trial).

48. *E.g.*, *Smith v. Des Moines Pub. Sch.*, 259 F.3d 942, 946–47 (8th Cir. 2001); *accord* *Encompass Office Solutions, Inc. v. La. Health Serv. & Indemnity Co.*, 919 F.3d 266, 273 (5th Cir. 2019) (“In other words, the party moving for judgment as a matter of law can prevail only ‘if the facts and inferences point so strongly and overwhelmingly in favor of the moving party that reasonable jurors could not have arrived at a contrary verdict.’” (quoting *Homoki v. Conversion Servs., Inc.*, 717 F.3d 388, 395 (5th Cir. 2013))).

49. *E.g.*, *Harper v. City of L.A.*, 533 F.3d 1010, 1021 (9th Cir. 2008) (quoting *Pavao v. Pagay*, 307 F.3d 915, 918 (9th Cir. 2002)); *see also id.* (“A renewed motion for judgment as a matter of law is properly granted ‘if the evidence, construed in the light most favorable to the nonmoving party, permits only one reasonable conclusion, and that conclusion is contrary to the jury’s verdict.’” (quoting *Pavao*, 307 F.3d at 918)); *Micro Chem., Inc. v. Lextron, Inc.*, 317 F.3d 1387, 1394 (Fed. Cir. 2003) (“[W]hen we review a district court’s denial of [judgment as a matter of law], we review a jury’s damages award under the substantial evidence standard.”).

substantial evidence standard, it “*must* uphold the jury’s findings unless the amount is grossly excessive or monstrous, clearly not supported by the evidence, or based only on speculation or guesswork.”⁵⁰

Under Rule 50, trial judges may grant a motion for a new trial as an alternative to JMOL.⁵¹ Further, under Rule 59, they may also grant a new trial in jury cases “for any reason for which a new trial has heretofore been granted in an action at law in federal court.”⁵² The standard for granting a new trial under Rule 59 has been viewed as less onerous than that under Rule 50: “Unlike judgment as a matter of law, a new trial may be granted even if there is substantial evidence supporting the jury’s verdict” and the trial judge “need not view [the evidence] in the light most favorable to the verdict winner” in determining that the jury’s verdict was egregiously “against the weight of the evidence.”⁵³ A trial judge’s decision to deny a motion for a new trial where the question is sufficiency of the evidence is generally viewed with great deference, with appellate courts speaking of reversal of such a denial as only permissible under strictly limited circumstances—for example, only upon “a clear showing of an absolute absence of evidence to support the jury’s verdict.”⁵⁴

In reviewing the sufficiency of an evidentiary array under such standards, consideration of the weight to be accorded expert testimony commonly involves reference to the same sorts of considerations—fitness and reliability—that have already been highlighted as of crucial significance for this Article’s study. The extent to which expert evidence supports a jury verdict or can otherwise thwart JMOL necessarily depends on the extent to which that evidence is appropriate to resolve issues relevant to decision of the case and the extent to which that evidence is properly viewed as reliable. Thus, appellate review of denials of JMOL can act as an alternative vehicle

50. *In re Exxon Valdez*, 270 F.3d 1215, 1248 (9th Cir. 2001) (quoting *Del Monte Dunes at Monterey, Ltd. v. City of Monterey*, 95 F.3d 1422, 1435 (9th Cir. 1996)).

51. FED. R. CIV. P. 50(b) (stating that, in ruling on a renewed motion for judgment as a matter of law, a “court may: (1) allow judgment on the verdict, if the jury returned a verdict; (2) order a new trial; or (3) direct the entry of judgment as a matter of law”).

52. FED. R. CIV. P. 59(a)(1).

53. *DLC Mgmt. Corp. v. Town of Hyde Park*, 163 F.3d 124, 133–34 (2d Cir. 1998); *see also* *Lipphardt v. Durango Steakhouse of Brandon, Inc.*, 267 F.3d 1183, 1186 (11th Cir. 2001) (“A judge should grant a motion for a new trial when the verdict is against the clear weight of the evidence or will result in a miscarriage of justice, even though there may be substantial evidence which would prevent the direction of a verdict.” (internal quotation marks omitted)); *id.* (“Because it is critical that a judge does not merely substitute his judgment for that of the jury, new trials should not be granted on evidentiary grounds unless, at a minimum, the verdict is against the great—not merely the greater—weight of the evidence.” (internal quotation marks omitted)).

54. *Rutherford v. Harris Cty.*, 197 F.3d 173, 179 (5th Cir. 1999) (internal quotation marks omitted); *see also* *Landes Constr. Co. v. Royal Bank of Can.*, 833 F.2d 1365, 1372 (9th Cir. 1987) (listing “only four strictly limited situations” in which the court would reverse denial of a motion for a new trial “on the grounds that the verdict is against the clear weight of the evidence”).

for considering many of the same questions regarding expert evidence that should inform a trial judge's determinations on admissibility. An appellate judgment that there was insufficient evidence to support a damages award because the expert evidence that was crucial to the derivation of such an award lacked any reasonable probative value can signal to trial judges that in the future they should seek to cut like evidentiary problems off at the head by refusing to admit such evidence on the front end.

II. Patent Remedies and Damages Experts

As concerns about patent assertion entities (PAEs)—often called “patent trolls”⁵⁵—grew in the aughts, calls arose to try to limit the “patent tax” that they imposed on innovators who bring new products and services to market.⁵⁶ One concern was that PAEs could use patents to “hold up” innovators who had already committed substantial investments to specific products or services: the threat or actual issuance of an injunction against patent infringement, which could prevent effective exploitation of such a line of investment, could enable a PAE to extract a licensing fee far exceeding the price that a potential user of the patented technology would have been willing to pay before making the investments.⁵⁷ Another was that, in part because of difficulties in assigning value to a patented technology that formed only a relatively small part of a complex product or software program incorporating a multitude of component innovations, PAEs could obtain through the courts—in particular, through jury trials—disproportionate monetary awards of “reasonable royalties”⁵⁸ that might discourage private parties from taking

55. Lauren Cohen, John M. Golden, Umit G. Gurun & Scott Duke Kominers, “Troll” Check? *A Proposal for Administrative Review of Patent Litigation*, 97 B.U. L. REV. 1775, 1778 (2017) (describing the term “patent trolls” as “a disparaging moniker for patent-assertion entities”).

56. See John M. Golden, Commentary, “Patent Trolls” and Patent Remedies, 85 TEXAS L. REV. 2111, 2112 (2007) [hereinafter Golden, “Patent Trolls”] (“A favorite villain in [critiques of the patent system] is the ‘patent troll’—apparently one of a class of patent owners who do not provide end products or services themselves, but who do demand royalties as a price for authorizing the work of others.”); Christopher S. Marchese et al., *Retooling Patent Damages for NPE Cases*, 14 SEDONA CONF. J. 47, 50 (2013) (“Congressional damages reform [proposals] sprung largely from the soaring damages verdicts in NPE cases.”).

57. See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEXAS L. REV. 1991, 1993 (2007) (“[T]he threat of an injunction can enable a patent holder to negotiate royalties far in excess of the patent holder’s true economic contribution.”).

58. The main provision on monetary relief in the United States Patent Act states: “Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the *invention* by the infringer, together with interest and costs as fixed by the court.” 35 U.S.C. § 284 (2012) (emphasis added).

on the risks of innovation, just as the threat of business-interrupting injunctions could.⁵⁹

During the aughts, Congress considered a series of patent reform proposals designed either to limit the availability of injunctions against patent infringement or to reduce the likelihood of excessive royalty awards by providing specific instruction on the need to “apportion” the overall value of an infringing product or process so that a reasonable royalty reward reflected only the value properly attributable to the patented technology.⁶⁰ In the end, Congress enacted none of these proposals, which had become focal points of controversy in efforts to pass patent reform legislation.⁶¹

Instead, patent remedies reform effectively came through the courts.⁶² In deciding *eBay Inc. v. MercExchange, L.L.C.* in 2006,⁶³ the United States Supreme Court held that, even after a final judgment finding patent infringement, an injunction against further patent infringement should not issue automatically but instead should only issue after a patent holder establishes “irreparable injury,” the inadequacy of legal remedies such as damages, a “balance of hardships between the plaintiff and defendant” “warrant[ing]” an injunction, and lack of “disserv[ice]” to the public interest from the injunction’s issuance.⁶⁴ In a concurring opinion, Justice Kennedy specifically tied the newly articulated limitations on availability of injunctive relief to concern about PAEs—namely, concern that “firms us[ing] patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees” might otherwise employ an injunction or threat

59. See John M. Golden, *Principles for Patent Remedies*, 88 TEXAS L. REV. 505, 583 (2010) [hereinafter Golden, *Principles*] (noting concern that the patent system provided “an insufficient check on disproportionate [monetary] awards”).

60. See, e.g., Marchese et al., *supra* note 56, at 50 (“Damages reform became one of the most controversial aspects of the Congressional effort—specifically inclusion of apportionment—and ultimately, when the [2011 America Invents Act patent reform bill] became law, [the Patent Act’s main provision on monetary relief] remained unchanged in this key respect.”); William C. Rooklidge, *Reform of the Patent Laws: Forging Legislation Addressing Disparate Interests*, 88 J. PAT. & TRADEMARK OFF. SOC’Y 9, 14 (2006) (discussing early proposals to rein in the issuance of injunctions); *id.* at 19–20 (describing legislative proposals to codify principles of “apportionment”).

61. See Golden, *Principles*, *supra* note 59, at 507 (noting efforts “to advance or to thwart proposed legislation in which patent damages ha[d] already been a major bone of contention”); Rooklidge, *supra* note 60, at 16 (observing that “[b]ecause of extensive criticism of these proposals to curtail injunctive relief and the strong opposition of the pharmaceutical and biotechnology industries, the injunction proposals were not carried over into subsequent legislative proposals” (footnote omitted)).

62. See John M. Golden, *Discretion in Patent Damages*, 37 REV. LITIG. 287, 310 (2018) (“Given congressional failure to enact substantial damages reform, the courts have become the main theater for action in developments in patent damages law.”); Edward Lee, *Introduction: The Future of Patent Reform*, 4 I/S: J.L. & POL’Y FOR INFO. SOC’Y 1, 3 (2008) (observing that, while proposed legislation stalled in Congress, “[p]atent reform . . . proceeded on another front, most notably in the Supreme Court”—for example, in relation to the availability of permanent injunctions).

63. 547 U.S. 388 (2006).

64. *Id.* at 391.

thereof “as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent.”⁶⁵ In the wake of *eBay*, PAEs indeed appear to have had significantly more difficulty obtaining injunctions against patent infringement, and injunctions appear to have become less likely in cases in which patented technology accounts for only part of a multicomponent product or process.⁶⁶

Judicial response to concerns about reasonable royalty damages has come through a series of decisions by the Court of Appeals for the Federal Circuit.⁶⁷ The focal point of these decisions has been the problem of apportionment, essentially a problem of disaggregation—of first disentangling the value of a patented part of a multipart product or process from other value-contributing aspects and of then assigning to the employment of that part a reasonable royalty rate that itself amounts to a fraction of the apportioned value.⁶⁸ Because many patent owners commonly license their patents, if at all, only in multipatent bundles⁶⁹ and because patent licensing and settlement terms are generally confidential,⁷⁰ the task of performing this disaggregation is generally far from straightforward. Unsurprisingly, therefore, in court cases, this task is typically assigned in the first instance to an expert or, rather, two experts—one for the patent holder and one for the accused infringer—who frequently come to wildly disparate estimates of a patent technology’s reasonable royalty value.⁷¹ Assuming the experts’ testimony in relation to such estimates is deemed admissible and the question of damages assessment goes to trial, a jury must commonly decide what to make of these estimates and the supporting analysis behind them.⁷²

65. *Id.* at 396 (Kennedy, J., concurring).

66. See Thomas F. Cotter & John M. Golden, *Remedies*, in 2 RESEARCH HANDBOOK ON THE ECONOMICS OF INTELLECTUAL PROPERTY LAW 390, 401 (Peter S. Menell & David L. Schwartz eds., 2019).

67. See Golden, *Reasonable Certainty*, *supra* note 5, at 261 (observing that, in the first two decades of the twenty-first century, “the Federal Circuit issued a series of decisions tightening the evidentiary standards for establishing the value of reasonable royalty damages”).

68. See *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1327 (Fed. Cir. 2014) (providing instruction on the need to apportion value to arrive at a proper royalty base to which to apply a reasonable royalty rate).

69. See Golden, *Reasonable Certainty*, *supra* note 5, at 263–64 (observing that a patent license “will often involve the licensing of multiple patents beyond those that a court has found to have been infringed”).

70. See *id.* at 263 (“With patent licenses generally held secret, much activity relating to patent valuation remains confidential and effectively inaccessible for parties and courts looking to assess the value of individual sets of patent rights.”).

71. See, e.g., Golden, “*Patent Trolls*,” *supra* note 56, at 2151 (providing examples of cases in which “experts’ estimates of damages differed” by factors ranging from five to about 200).

72. See Jorge L. Contreras & Michael A. Eixenberger, *Model Jury Instructions for Reasonable Royalty Patent Damages*, 57 JURIMETRICS 1, 1 (2017) (“[T]he calculation of damages in any given case has traditionally been a question of ‘fact’ delegated to the jury.”).

A good example of the potential Russian-doll nature of apportionment challenges appears in the form of one of the first prominent cases in which the Federal Circuit sought to rein in the use of expert testimony to assess reasonable royalty awards, *Lucent Technologies, Inc. v. Gateway, Inc.*⁷³ In this case, experts provided testimony on the reasonable royalty that should be awarded for infringement of a Lucent-owned patent by the date-picker function of the electronic calendar feature of Microsoft Outlook, a software program primarily used for email and commonly distributed as part of a Microsoft Office suite of programs that also included the word-processing program Microsoft Word, the spreadsheet program Microsoft Excel, and the presentation-display program Microsoft PowerPoint.⁷⁴ The date-picker function enabled a user to avoid having to type in the date, say, for recording a new appointment in the calendar.⁷⁵ Instead, a user could employ the date-picker function “to select a series of numbers, corresponding to the day, month, and year, using graphical controls.”⁷⁶

The apportionment challenge in this case was to determine how much Microsoft revenue should be viewed as attributable to Outlook calendar’s date-picker function, where Outlook itself accounted for only a fraction of the value of the Office suite⁷⁷ and the Office suite itself was commonly not sold to consumers separately but instead bundled “with computers sold running the Windows operating system.”⁷⁸ Hence, in deciding whether to uphold and how to amend an ultimate jury verdict on a reasonable royalty, an expert effectively needed (1) to assess the average revenue to attribute to Office, which was estimated at about a third of the retail value of Office when sold separately;⁷⁹ (2) to determine what portion of that average revenue for Office was properly attributable to Outlook, which the trial judge held to be no more than one-fourth;⁸⁰ and then (3) to determine what portion of the revenue attributable to Outlook should be attributed to the Outlook calendar’s

73. 580 F.3d 1301 (Fed. Cir. 2009).

74. *Lucent Techs., Inc. v. Microsoft Corp.*, 837 F. Supp. 2d 1107, 1120 (S.D. Cal. 2011) (discussing “[a] current version of Office including Word, Excel, PowerPoint, and Outlook”).

75. *Id.* at 1317 (describing “Outlook’s calendar date-picker tool”).

76. *Id.*

77. *Id.* at 1121 (finding that “when Outlook is sold as part of Office, the highest amount of revenue attributable to Outlook that is supported by substantial evidence is \$24.55”).

78. See Michael A. Koenecke, Review, *WordPerfect Office X4*, GPSOLO, June 2009, at 62 (“The effective strategy of bundling Microsoft Office with computers sold running the Windows operating system, together with flawed early implementations of WordPerfect for Windows, has established Microsoft Word as the dominant consumer and business word processor for years.”).

79. See *Lucent*, 837 F. Supp. 2d at 1120 (observing that Lucent’s expert “estimated that the average revenue attributable to Office was \$98.19”).

80. See *id.* at 1121 (supporting attribution of equal value to each of these four components by pointing to the fact that the standalone prices of each of the Excel, Outlook, PowerPoint, and Word components of Office were identical).

date-picker function.⁸¹ The multiple steps involved in this analysis as well as the difficulty in disentangling the values of components or functionalities commonly appearing together help explain how experts can arrive at valuations for specific patented technologies that differ by orders of magnitude.⁸²

How has the Federal Circuit sought to tighten the constraints on expert evidence for reasonable royalties? Much like courts in other areas of law⁸³ and at least in general accord with Rule 702 of the Federal Rules of Evidence,⁸⁴ the Federal Circuit has done so by, broadly speaking, (1) seeking to ensure fit between expert methodologies and the particular circumstances at hand, (2) requiring the use of appropriate data in support of whatever methodology is adopted, and (3) demanding that experts approach royalty calculation in ways that might be expected to reliably yield reasonable results.

On the first front of fitness, the Federal Circuit has rejected an expert's use of a Nash bargaining model⁸⁵ to justify a "50/50 profit-split" on grounds

81. *See id.* at 1113–14 (explaining how Lucent's expert arrived at a 3% figure for the fraction of Outlook sales attributable to the Outlook calendar's date-picker function).

82. *Cf.* SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 143 (2004) ("If several patent holders are vying for the value of the second-generation product, and all the technologies are essential to its development, there is no natural benchmark to establish how the profit on the second-generation product should be divided.").

83. *See supra* text accompanying notes 42–46.

84. *See supra* text accompanying note 35. Perhaps significantly, the Federal Circuit views itself as bound to apply the law of the regional circuit from which a district court opinion comes when the Federal Circuit reviews questions of the admissibility of evidence and the propriety of a decision on JMOL. *See* Synthes USA, LLC v. Spinal Kinetics, Inc., 734 F.3d 1332, 1340 (Fed. Cir. 2013) ("The grant or denial of JMOL is a procedural issue not unique to patent law; therefore, we apply the law of the relevant regional circuit."); Micro Chem., Inc. v. Lextron, Inc., 317 F.3d 1387, 1390–91 (Fed. Cir. 2003) (explaining that admissibility of evidence is "a procedural issue not unique to patent law" and thus to be reviewed "under the law of the regional circuit").

85. A Nash bargaining model assumes an idealized bargaining situation in which, *inter alia*, the parties involved act rationally, can make accurate assessments of the relative value of various alternatives to both themselves and their counterparties, and have equivalent skill in bargaining. Doug Kidder & Vince O'Brien, *The Nash Bargaining Solution*, LICENSING EXEC. SOC'Y INT'L: LES NOUVELLES (Aug. 2014), <https://www.lesi.org/les-nouvelles/les-nouvelles-article-of-the-month/les-nouvelles-article-of-the-month-archives/les-nouvelles-article-of-the-month-august-2014> [<https://perma.cc/WU3Y-GWXX>]. A concern with the deployment of such a model is that, although its assumptions may "seem plausible" in the abstract, they often do not correspond to real-world limitations on party knowledge and rationality. *See id.* at 3 ("[T]he growing evidence from behavioral economics indicates that people aren't as rational as required by [the Nash Bargaining Solution]."). Thus, to the extent a Nash bargaining model is presented as predicting how the parties before a court would have divided the value from use of a claimed invention if they had sought in good faith to enter into a licensing arrangement, use of a Nash bargaining model is vulnerable to the criticism that there might be little reason to believe the parties' states of mind and knowledge correspond well with the model's assumptions. *Cf.* VirnetX, Inc. v. Cisco Sys., Inc., 767 F.3d 1308, 1325 (Fed. Cir. 2014) (observing that VirnetX's damages expert presented a Nash bargaining model as making a prediction about how the parties would have split value derived from the patented invention).

that the expert had not shown that the premises of the model fit the particular circumstances of the case.⁸⁶ Previously and even more significantly, the Federal Circuit had rejected use of a “25 percent rule of thumb,” under which reasonable royalty calculation would begin with a default presumption that a patentee should receive 25% of expected profits from an infringing product, with a court deviating upward or downward from this 25% figure based on the individual facts of the given case.⁸⁷ The Federal Circuit explicitly tied this rejection to the fit requirement under Rule 702, saying, “Evidence relying on the 25 percent rule of thumb is thus inadmissible under *Daubert* and the Federal Rules of Evidence, because it fails to tie a reasonable royalty base to the facts of the case at issue.”⁸⁸ Although some commentators have characterized the Federal Circuit’s general rejection of the 25% rule as “rather extreme,” given that “an expert needs to start somewhere” and the rule apparently had some general empirical basis in licensing practices,⁸⁹ the rejection of use of a nonspecifically justified 25% rule or Nash bargaining model appears consistent with the general demand for fitness under Rule 702.⁹⁰

Similarly, the Federal Circuit’s work on the second front to ensure use of proper data in support of a particular methodology, which might be viewed as a question of fit as well as reliability, seems generally in line with courts’ efforts to implement Rule 702 in other areas. The Federal Circuit has given substantial attention to the use of patent licensing practices—in particular, other patent licenses or offers of licenses—to establish a reasonable royalty rate or lump-sum licensing fee. The Federal Circuit has stressed that such licenses and their surrounding contexts and associated technologies must be established to have sufficient comparability to the circumstances under which the patent holder and adjudged infringer might have hypothetically negotiated a license for the patented technology in advance of the infringement.⁹¹ Further, the Federal Circuit has stated that offered-but-not-

86. See *VirnetX*, 767 F.3d at 1332 (observing that the Nash theorem “asserts nothing about what situations in the real world fit [its] premises”).

87. See *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1317 (Fed. Cir. 2011) (“It is of no moment that the 25 percent rule of thumb is offered merely as a starting point to which [various case-specific] factors are then applied to bring the rate up or down.”).

88. *Id.* at 1315.

89. 5 FAIGMAN ET AL., *supra* note 36, § 43:9.

90. See KAYE ET AL., *supra* note 39, § 6.2 (noting that, for “unusually prejudicial” types of evidence, such as “evidence of bad character . . . to show a general tendency to act wrongly” or “evidence of insurance . . . to suggest that the insured might behave carelessly,” “ad hoc balancing often crystallizes into more specialized rules”).

91. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1332 (Fed. Cir. 2009) (emphasizing “Lucent’s burden to prove that the licenses relied on were sufficiently comparable to sustain a lump-sum damages award of \$358 million”); see also *Whitserve, LLC v. Computer Packages, Inc.*,

accepted licensing rates have only “limited” evidentiary value because, among other things, “patentees could artificially inflate the royalty rate by making outrageous offers.”⁹² In so doing, the Federal Circuit appears not only to have acted justifiably from a general truth-seeking standpoint but also to have acted in conformity with Rule 702’s instruction that an expert’s use of an acceptable methodology—here, the generally accepted, albeit academically criticized,⁹³ use of preexisting licenses to compute a reasonable royalty rate—may be undermined if unsupported by adequate data.⁹⁴

Finally, in apparent service of requiring a reliable methodology, the Federal Circuit has emphasized constraints on when an expert may properly use the value of an entire product as the royalty base and has counseled instead that an expert must generally use a royalty base that is no greater than the value of the “smallest salable patent-practicing unit” (SSPPU).⁹⁵ Focus on the value of the SSPPU as a ceiling on the royalty base could increase the reliability of reasonable royalty calculation by helping avoid the biasing of jurors toward larger-than-justified awards that might result from larger base numbers.⁹⁶ The relatively limited size of the SSPPU-restricted royalty base could also help protect against arbitrariness or error in the selection of a royalty rate.⁹⁷

694 F.3d 10, 30 (Fed. Cir. 2012) (observing that, just as “running royalties [might] not constitute substantial evidence in support of” the amount of an award meant to represent a lump-sum licensing fee, “lump-sum payments similarly should not support running royalty rates without testimony explaining how they apply”); *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 870 (Fed. Cir. 2010) (holding that a damages expert improperly “used licenses with no relationship to the claimed invention to drive the royalty rate up to unjustified double-digit levels”).

92. *Whitserve*, 694 F.3d at 30.

93. See Erik Hovenkamp & Jonathan Masur, *How Patent Damages Skew Licensing Markets*, 36 REV. LITIG. 379, 381 (2017) (criticizing “licensing-based damages” for “distort[ing] both litigation outcomes and licensing behavior”).

94. See FED. R. EVID. 702(b) (permitting an expert to “testify in the form of an opinion or otherwise if [inter alia] the testimony is based on sufficient facts or data”).

95. *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 67 (Fed. Cir. 2012) (emphasizing that, except where “it can be shown that the patented feature drives the demand for an entire multi-component product,” “it is generally required that royalties be based not on the entire product, but instead on the ‘smallest salable patent-practicing unit’”).

96. See Thomas F. Cotter et al., *Reasonable Royalties*, in PATENT REMEDIES AND COMPLEX PRODUCTS: TOWARD A GLOBAL CONSENSUS 6, 43 (C. Bradford Biddle et al. eds., 2019) (discussing concern that, if presented to a jury, “the value of the entire accused product will tend to have an undue influence on jurors in cases where the asserted patent covers just one of many components or features that comprise the entire product”); cf. Bernard Chao & Roderick O’Dorisio, *Saliency, Anchors & Frames: A Multicomponent Damages Experiment*, 26 MICH. TECH. L. REV. 1, 3 (2019) (using experiments to explore how “a patentee’s irrationally high damages demand may ‘anchor’ the juries to that number”).

97. See Cotter et al., *supra* note 96, at 43 (noting one study suggesting that “U.S. juries tend to award royalty rates that are within the general vicinity of 10 percent, regardless of the size of the base that the rate is applied to”); *id.* at 45 (“[D]efaulting to a smaller royalty base will tend to reduce the effect of error in royalty rate selection.”).

From a theoretical standpoint, however, the demand for reference to the value of the SSPPU might seem overly rigid and perhaps distortive in itself. The Federal Circuit itself has observed that a larger-than-minimal royalty base is not necessarily a problem as long as the royalty rate is proportionately small to compensate: what matters ultimately for the reasonableness of an award is the product of the royalty base and rate.⁹⁸ Further, the Federal Circuit has also recognized that “widespread infringement [can] artificially depress[] [the value of] past licenses.”⁹⁹ The same might be expected to be true of the value of an SSPPU, whose preexisting market value might not properly reflect the value of incorporated patented technology if infringement has meant that many have effectively obtained such technology for free, or if the profit-making aspects of a business model are focused on complementary products, processes, or assets that are necessary in order to exploit the value of the SSPPU.¹⁰⁰ Hence, in some circumstances, focus on the value of the SSPPU as priced under existing market conditions could distort damages awards downwards by requiring an expert to derive a reasonable royalty as a fraction of a base that does not reflect the value of the patented invention.¹⁰¹ The Federal Circuit has explicitly recognized that focus on the value of the SSPPU might not suffice for proper apportionment for a different but complementary reason: the SSPPU—at least if defined, as seems intended, in accordance with a practical view of what constitutes a plausible “salable” unit—might itself incorporate a variety of value-creating features beyond those covered by the patent in question, and therefore the value of the SSPPU might itself be substantially inflated relative to the value of the patented technology.¹⁰² Nonetheless, as long as the SSPPU approach is applied with sensitivity to such distortive possibilities, the existence of such possibilities

98. *See* Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1338–39 (Fed. Cir. 2009) (“Simply put, the base used in a running royalty calculation can always be the value of the entire commercial embodiment, as long as the magnitude of the rate is within an acceptable range (as determined by the evidence).”).

99. *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 872 (Fed. Cir. 2010).

100. *Cf.* John M. Golden & Hannah J. Wiseman, *The Fracking Revolution: Shale Gas as a Case Study in Innovation Policy*, 64 EMORY L.J. 955, 1000 (2015) (discussing how, “without obtaining patents or keeping certain forms of key information permanently secret, companies like Mitchell Energy and Devon Energy could use investments in complementary assets—private land and mineral rights—to appropriate substantial returns from innovation” in shale-gas extraction).

101. *See* Anne Layne-Farrar, *The Patent Damages Gap: An Economist’s View of U.S. Statutory Patent Damages Apportionment Rules*, 26 TEX. INTELL. PROP. L.J. 31, 37 (2018) (discussing “a potential disconnect between the SSPPU standard and the value-of-use calculation”).

102. *See* VirnetX, Inc. v. Cisco Sys., Inc., 767 F.3d 1308, 1327 (Fed. Cir. 2014) (“Where the smallest salable unit is, in fact, a multi-component product containing several non-infringing features with no relation to the patented feature . . . the patentee must do more to estimate what portion of the value of that product is attributable to the patented technology.”).

need not be fatal: the necessity of some context-sensitive corrections in such situations might be worth the avoidance of distortive effects that might otherwise result from greater use of *supra*-SSPPU royalty bases.

The potential need for case-by-case adjustments might seem to suggest, however, that, whatever the merits of what the Federal Circuit has wrought over the last two decades, the regulation of the use of expert evidence on patent damages should be left more fundamentally in the hands of trial judges, without any general prescriptions, for example, to use SSPPU value for a royalty base and without any general proscriptions against, say, use of a 25% royalty rate as a default value from which the jury might depart upward or downward. By comparison with courts of appeals in cases involving other forms of intellectual property, the Federal Circuit might fairly be viewed as unusually active in restricting district court discretion on evidentiary matters relating to infringement damages.¹⁰³ On the other hand, this comparative level of activity might sensibly follow from the intensity of apportionment difficulties in patent cases,¹⁰⁴ the Federal Circuit's high volume of patent case opinions and the expertise and opportunity for action that come with that volume,¹⁰⁵ and the Federal Circuit's commonly perceived charge to help bring uniformity and predictability to the courts' implementation of patent law.¹⁰⁶ In other words, a combination of special demand for appellate intervention and the Federal Circuit's special institutional competence relative to more generalist trial-level courts might justify the Federal Circuit being distinctively active in policing reliance on the testimony of patent-damages experts.

But perhaps the Federal Circuit's interventions with respect to patent damages should not be considered an anomaly that needs particular explanation. A common theme of the Federal Circuit's analysis of damages

103. See, e.g., *GlobeRanger Corp. v. Software AG U.S.A., Inc.* 836 F.3d 477, 500 (5th Cir. 2016) (upholding the district court's allowance of testimony based on a less than fully "precise damages model" where "the district court's decision to allow testimony based on this measure was not manifestly erroneous") (internal quotation marks omitted).

104. See Pamela Samuelson, John M. Golden & Mark P. Gergen, *Recalibrating the Disgorgement Remedy in Intellectual Property Cases*, 100 B.U. L. REV. (forthcoming Dec. 2020) (discussing how apportionment problems in utility patent cases help explain utility patent law's abandonment of disgorgement of infringer profits as a remedy).

105. See John M. Golden, *The Supreme Court as "Prime Percolator": A Prescription for Appellate Review of Questions in Patent Law*, 56 UCLA L. REV. 657, 664–67 (2009) (describing Federal Circuit judges' relative expertise in questions of patent law); cf. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1938 (2016) (Breyer, J., concurring) (opining that, in conducting abuse-of-discretion review of district court decisions on enhanced damages, "the Federal Circuit may take advantage of its own experience and expertise in patent law").

106. See John M. Golden, *Patent Law's Falstaff: Inequitable Conduct, the Federal Circuit, and Therasense*, 7 WASH. J.L. TECH. & ARTS 353, 360 (2012) (noting "Congress's apparent purpose in promoting national uniformity and predictability in patent litigation through creation of a centralized court of appeals for patent infringement suits").

testimony is the need for reasoned justification, whether for the use of a certain preexisting patent license as an indicator of an appropriate value for a reasonable royalty,¹⁰⁷ whether for use of a Nash bargaining model to assess the likely result of a hypothesized negotiation between a willing licensor and willing licensee,¹⁰⁸ or whether for use of a standard industry licensing rate as providing a presumptive starting point for calculation of the reasonable royalty rate for the specific technology before a court.¹⁰⁹ This demand for reasoned justification resonates strongly with the demand for evidence of reasoned decision-making that, under the moniker of “hard-look review,” courts generally apply to the actions of expert government actors under federal administrative law.¹¹⁰

Judicial policing of an administrative agency’s provision of rationales for its decisions is effectively a way for courts to justify the deference that they ordinarily give to agencies not only on questions of fact, but also on questions of policy and law.¹¹¹ To the extent expertise is a substantial rationale behind the special power and responsibility that an administrative agency has, the courts thus play an appropriate role in insisting that an agency show that its actions reflect reasoned application of that expertise.¹¹²

Likewise, judges can appropriately insist that expert witnesses give evidence that their opinions are the products of reasoned application of their expertise. Expert witnesses have special latitude to place opinions in evidence, “including those that are not based on firsthand knowledge or observation.”¹¹³ In *Daubert* itself, the United States Supreme Court pointed to this special latitude as grounds for enforcing a requirement “that the expert’s opinion . . . have a reliable basis in the knowledge and experience of

107. *See supra* text accompanying note 91.

108. *See supra* text accompanying note 86.

109. *Cf. supra* text accompanying notes 87–90.

110. *See* Catherine M. Sharkey, *State Farm “with Teeth:” Heightened Judicial Review in the Absence of Executive Oversight*, 89 N.Y.U. L. REV. 1589, 1605 (2014) (“Even if a court is ill-equipped to evaluate the details of an agency’s scientific evidence, hard-look substantive review demands that an agency supply generalist judges with reasoned explanations backed by sufficient scientific references.”).

111. *Cf.* HARRY T. EDWARDS & LINDA A. ELLIOTT, *FEDERAL COURTS STANDARDS OF REVIEW: APPELLATE REVIEW OF DISTRICT COURT DECISIONS AND AGENCY ACTIONS* 167–68 (2007) (observing that “the touchstone of arbitrary and capricious review [of agency action] is reasoned decisionmaking” and that the standard is applied not only to “fundamental legislative-type policy judgments” in informal rulemaking, but also questions of “the adequacy of the evidence in the record” and “adherence to precedent” in agency adjudication).

112. *See* Cass Sunstein, *From Technocrat to Democrat*, 128 HARV. L. REV. 488, 496 (2014) (“[A] requirement of reason-giving can be seen as an effort to ensure that technical expertise is in fact being applied”); Louis J. Virelli III, *Deconstructing Arbitrary and Capricious Review*, 92 N.C. L. REV. 721, 723 (2014) (“[A]rbitrary and capricious—or ‘hard look’—review of agency decisions is an important source of legitimacy for the administrative state.”).

113. *Daubert v. Merrill Dow Pharm., Inc.*, 509 U.S. 579, 592 (1993).

his discipline.”¹¹⁴ When a witness’s claim to expertise is analytical prowess, rather than special factual knowledge—e.g., that the expert has a background in economic analysis that gives her special proficiency in computing a proper value for a reasonable royalty—it seems reasonable for a court to undertake a form of hard-look review demanding that the expert provide reasoned justification for her conclusions without substantial, material analytical gaps. Alternatively, if there are gaps in the expert’s analysis, these should be prominently acknowledged, with the relevant decision-maker receiving clear instruction that it will need to fill them without substantial reliance on the witness’s expertise. Significantly, the disciplining value of such hard-look review extends beyond situations in which *Daubert* gatekeeping is applied as a means of jury protection or, alternatively viewed, jury control. As exemplified by hard-look review’s deployment in administrative law contexts where juries are often never in play,¹¹⁵ the demand for a hard look can help ensure that a judge herself avoids acquiescing too easily in the opinions of apparently well-qualified experts.¹¹⁶ In short, although one could view the Federal Circuit’s recent activity in policing patent-damages experts as particularly justified by distinctively applicable circumstances, this activity also enjoys a broader base of justification. The Federal Circuit’s demand for consistently reasoned justification of expert analysis may provide an example that circuit courts, including the Federal Circuit in relation to other issues, might productively follow much more generally.

For some, however, the analogy to hard-look review in administrative law is likely to be less than reassuring. As Sidney Shapiro has pointed out, although a requirement that an agency “provide ‘adequate reasons’ for adoption of a rule” “in the abstract seems eminently reasonable, it is controversial.”¹¹⁷ Critics complain that inconsistency in the rigor with which courts apply hard-look review is a source of arbitrariness in itself.¹¹⁸ Further,

114. *Id.*

115. See, e.g., *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Ins. Co.*, 463 U.S. 29, 57 (1983) (enforcing demands for reasoned decision-making on agency rulemaking subjected to first-instance review by the Court of Appeals for the D.C. Circuit); see also Thomas W. Merrill, *Article III, Agency Adjudication, and the Origins of the Appellate Review Model of Administrative Action*, 111 COLUM. L. REV. 939, 945 (2011) (noting how courts “layer[ed] ‘hard look’ review onto the existing structure of the appellate review model” for much judicial review of administrative action).

116. Cf. James R. Steiner-Dillon, *Epistemic Exceptionalism*, 52 IND. L. REV. 207, 256 (2019) (contending that, when judges apply the Federal Rules of Evidence, including demands for relevance and reliability of expert testimony, more loosely in bench trials than in jury trials, the “judges deprive themselves of valuable safeguards against cognitive error and greatly increase the risk of biased or irrational decision making”).

117. Sidney A. Shapiro, *Rulemaking Ossification and the Debate over Reforming Hard Look Review*, 41 ADMIN. & REG. NEWS, Fall 2015, at 13.

118. See Sidney A. Shapiro & Richard W. Murphy, *Arbitrariness Review Made Reasonable: Structural and Conceptual Reform of the “Hard Look,”* 92 NOTRE DAME L. REV. 331, 333 (2016) (describing hard-look review as a form of “judicial review that can be political and unpredictable”).

there is concern that the risk of rigorous hard-look review adds to costs and delays in rulemaking, with agencies perhaps deterred from engaging in needed regulation by the prospect of working for years to generate “encyclopedic rulemaking justifications” that will attract judicial scrutiny for several years more.¹¹⁹ But the second of these concerns is primarily a rulemaking concern. If the stakes are high enough, the demands of adversarial adjudication can already be expected to lead parties and their experts to expend substantial resources on developing their arguments and rationales, and the judge’s job in giving a hard look to expert testimony is simply to help ensure that at least this aspect of the adversarial enterprise is reasonably likely to promote accuracy and confidence in the court’s decision-making.¹²⁰ If the stakes are low, on the other hand, the demands for reasonable justification of a particular damages award can be expected to be sensibly lower so that the cost of establishing the particular award is not unduly large relative to its value.¹²¹

As for the concern that judges can differ in their reasonableness assessments, this seems a potential objection to almost any substantial reasonableness standard that a court might deploy on any of a number of issues—for example, in determining the reasonable interpretation of a contract term¹²² or in assessing whether a reasonable jury could rule contrary to a position taken in a summary judgment motion.¹²³ We commonly, if not necessarily, rely on judges to make such reasonableness assessments even though different judges may come to different conclusions and might even have general disagreements about how to arrive at proper conclusions. Moreover, checking a portion of an evidentiary record for basic rational gaps or errors seems a task that judges can reasonably be expected to perform with

119. Shapiro, *supra* note 117, at 13; *see also* W. Hamilton Jordan, *Calibrating Judicial Scrutiny of Agency Enforcement Decrees*, 34 *YALE L. & POL’Y REV.* 57, 73–74 (2015) (“By prompting more deliberative decisionmaking (or at least more thorough recordkeeping), hard look review generally hampers the pace and flexibility of an agency’s regulatory choices.”).

120. A court might seek to mitigate concerns about undue surprise to parties or their experts regarding hard-look demands by allowing for amendment or supplementation of expert reports in a situation where a party or party expert could reasonably have failed to anticipate the specific nature of the court’s understanding of what reasoned analysis requires. *Cf.* *Harris Corp. v. Ruckus Wireless, Inc.*, No. 6:11-cv-618-Orl-41KRS, 2015 WL 3671355, at *4 (M.D. Fla. June 12, 2015) (discussing a contention that an amended expert report was permissible under a court management and scheduling order allowing amendment in light of novel developments such as new judicial precedent).

121. *See* Golden, *Reasonable Certainty*, *supra* note 5, at 276 (“[T]he size of asserted damages can affect the appropriate level of certainty demanded.”).

122. *See* RESTATEMENT (SECOND) OF CONTRACTS § 203(a) (AM. LAW INST. 1981) (“[A]n interpretation which gives a reasonable, lawful, and effective meaning to all the terms is preferred to an interpretation which leaves a part unreasonable, unlawful, or of no effect.”).

123. *See* *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986) (“[S]ummary judgment will not lie if the dispute about a material fact is ‘genuine,’ that is, if the evidence is such that a reasonable jury could return a verdict for the nonmoving party.”).

positive results on average, even if judges can also be expected to make errors in one direction or another in individual cases.¹²⁴ Further, the systemic flexibility that allows for judicial disagreement on the interpretation or application of a reasonableness standard can have significant positive aspects in circumstances—as are typical for the assessment of patent-infringement damages such as a reasonable royalty—that feature an effort to balance conflicting social goals, difficulty in setting satisfactory baselines for value or even norms for private or public behavior, uncertainty about the long-term viability of any individual approach to answering a particular legal question, and a relative scarcity of useful and reliable information.¹²⁵ Such “circumstances of complexity, contingency, and substantial ignorance”¹²⁶ might be relatively typical for key questions in various forms of complex litigation. In such circumstances, general social goals of accuracy and acceptable settlement in the implementation of a legal scheme seem reasonably advanced by charging trial and appellate judges with giving expert testimony a hard look—but not an overbearing one—to help ensure that its contents reasonably vindicate an expert’s special evidentiary role.

Conclusion

The calculation of patent damages such as a reasonable royalty presents significant challenges for which the use of expert testimony is predictable, if not unavoidably vital. Struggles to employ and at the same time guide and restrain expert testimony on reasonable royalty damages have become prominent in the last two decades, in substantial part because of the rise of patent assertion entities (PAEs) that have intensified stresses on the United States patent system. Patent law’s peculiarly centralized court of appeals, the United States Court of Appeals for the Federal Circuit, has responded to such stresses by limiting the admissibility or cognizable sufficiency of expert evidence on reasonable royalties for patent infringement. Although seemingly more aggressive than the general appellate norm, this appellate-level activity has so far appeared in line with general understandings of the proper judicial role in regulating expert testimony and reliance on it. A strict understanding of the Federal Circuit’s rule of apportionment based on the smallest salable patent-practicing unit (SSPPU) might lead to an undue

124. Cf. Jonathan Masur, *A Hard Look or a Blind Eye: Administrative Law and Military Deference*, 56 HASTINGS L.J. 441, 509–10 (2005) (describing reasonableness review under a hard-look framework as typically involving “precisely the types of analyses to which judges are best suited and best situated to perform”).

125. See Golden, *Principles*, *supra* note 59, at 527 (describing such challenges in relation to assessment of patent-infringement remedies).

126. *Id.* at 512.

downward distortion of reasonable royalty awards under certain circumstances, but there currently seems enough flex in the articulation of the rule to accommodate corrective adjustments. Although imperfect, the current approach to regulating expert testimony on patent damages seems to embody a demand for “reasoned justifications”¹²⁷ that is at least a plausibly satisfactory form of “muddling through.”¹²⁸

127. John M. Golden, Note, *Navigating Uncertainty: Gatekeeping in the Absence of Hard Science*, 113 HARV. L. REV. 1467, 1484 (2000).

128. John M. Golden, *Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System*, 50 EMORY L.J. 101, 191 (2001) (“[G]iven present uncertainties, purposeful and careful muddling through may be the best way to begin the new century.”).