Loyola University Chicago Law Journal

Volume 48
Issue 2 *Winter 2016*

Article 8

2016

Rethinking the PHOSITA in Patent Litigation

Greg Reilly

Rethinking the PHOSITA in Patent Litigation

*Greg Reilly**

This Article was prepared for the Loyola University Chicago Law Journal*'s Symposium "Decisions, Decisions: Exploring Factors that Affect the Judicial Decision-Making Process." It questions the trend in Supreme Court cases and academic commentary toward greater reliance in patent litigation on the hypothetical "person having ordinary skill in the art" ("PHOSITA")—essentially a person of average abilities in the technical field of the invention. This trend reflects a desire to approach as closely as possible the first-best outcome of accuracy to the technical merits of patent disputes. But this first-best outcome is impossible given the constraints imposed by lay decision makers. Long-standing proposals to tailor patent litigation institutions to patent law's technical nature by increasing the technical competence of decision makers have made little headway. If lay decision makers are here to stay, then the optimal approach is to tailor patent law to the needs of these lay decision makers, including by reducing and constraining the PHOSITA's role. Lay judges and jurors lack the knowledge, training, and experience to reliably apply the PHOSITA's perspective themselves. Therefore, increased reliance on the PHOSITA equates with increased reliance on expert witnesses, which introduces a host of well-recognized problems. Attempting to approximate the theoretical ideal of technical fidelity through the PHOSITA is misguided due to the errors introduced by the expert witnesses necessitated by lay decision makers. Tailoring patent law to the needs of lay decision makers—including more legalistic and objective doctrines that reduce the role of the PHOSITA—may be optimal in practice, even if second-best in theory.*

* Assistant Professor of Law, IIT Chicago-Kent College of Law. Thanks to the editors of the *Loyola University Chicago Law Journal* for the invitation to participate in this symposium, as well as my co-panelists Jonas Anderson, Daniel Klerman, Floyd Mandell, and Matthew Sag for a fruitful discussion. Thanks also to Mark Rosen and David Schwartz for helpful discussions on this and earlier versions of the project.

INTRODUCTION

Patent litigation is a notoriously difficult area of law for federal district judges. A judge assigned a patent case must wrestle with both an intricate body of law and complex scientific concepts while managing a full docket of other cases.[1] Some federal judges love patent cases because

1. Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1196–97 (2002).

they are so challenging.[2] Others loathe patent cases for this same reason.[3] Regardless, patent cases are more difficult and complicated than most other federal litigation. The Federal Judicial Center weighs a patent case as the equivalent of nearly five ordinary cases—the fourth highest weight of dozens of categories of federal litigation.[4]

The doctrinal design choices made in patent law further complicate patent cases for judges.[5] Decision makers must resolve many patent law issues from the perspective of a "person having ordinary skill in the art" ("PHOSITA") (i.e., an average technical person in the relevant field).[6] Judges cannot resolve patent cases based on their own understanding or conclusions, or even those of a reasonable layperson.[7] Rather, judges must put themselves in the shoes of an expert in the field and resolve patent law issues as an expert would.[8] As generalists who rarely have any scientific or technical training, "judges are at a rather serious disadvantage in trying to put themselves in the shoes of an ordinarily skilled scientist."[9] For that reason, "[t]he PHOSITA construct, rooted in the scientific or technical, can be difficult for the courts to apply."[10] One federal judge compared the PHOSITA to "an inside joke that I'm not in

2. *See, e.g.*, Allan Pusey, *Marshall Law: Patent Lawyers Flock to East Texas Court for its Expertise and "Rocket Docket"*, DALLAS MORNING NEWS, March 26, 2006, at 1D (quoting Eastern District of Texas Judge Ward stating that he "sought out patent cases" when he became a judge because he "enjoyed the intellectual challenge"); Roy Strom, *Judge Dread and Patent Law*, CHI. LAW. (May 1, 2015), http://www.chicagolawyermagazine.com/Archives/2015/05/Patent-Law-Court-System.aspx (quoting Northern District of Illinois Judge Holderman as stating "I love this stuff" in reference to complex patent cases).

3. Kathleen M. O'Malley et al., *A Panel Discussion: Claim Construction from the Perspective of the District Judge*, 54 CASE W. RES. L. REV. 671, 682 (2004) (statement of Judge Saris) ("I have heard trial judges claim that they dislike patent litigation, partly because it is hard."); *id.* at 683 n.31 ("A lot of my colleagues hate patent cases. *Hate* them. They say, 'I tell you what, if you do my patent case, I'll do five ERISA cases.'").

4. PATRICIA LOMBARD & CAROL KRAFKA, FED. JUDICIAL CTR., 2003–2004 DISTRICT COURT CASE—WEIGHTING STUDY: FINAL REPORT TO THE SUBCOMMITTEE ON JUDICIAL STATISTICS OF THE COMMITTEE ON JUDICIAL RESOURCES OF THE JUDICIAL CONFERENCE OF THE UNITED STATES 4 (2005), http://www.fjc.gov/public/pdf.nsf/lookup/CaseWts0.pdf/$file/CaseWts0.pdf.

5. Peter Lee, *Patent Law and the Two Cultures*, 120 YALE L.J. 2, 13 (2010) ("While the subject matter of patent cases is often technologically complex, patent doctrine itself renders this a particularly difficult area of law to apply.").

6. Timothy R. Holbrook, *Patents, Presumptions, and Public Notice*, 86 IND. L.J. 779, 781 (2011).

7. Jeanne C. Fromer & Mark A. Lemley, *The Audience in Intellectual Property Infringement*, 112 MICH. L. REV. 1251, 1282 (2014); Lee, *supra* note 5, at 12.

8. Fromer & Lemley, *supra* note 7, at 1282.

9. Burk & Lemley, *supra* note 1, at 1196.

10. Holbrook, *supra* note 6, at 782.

on."[11]

Because lay judges do not personally have knowledge or experience to resolve issues from the PHOSITA's perspective, patent law's reliance on the PHOSITA necessitates judicial reliance on expert witnesses to opine on the knowledge, skill, and understanding of experts in the field.[12] In the evidence scholarship and law and science literature, however, commentators widely criticize expert witnesses as costly and biased in favor of the party paying them. Commentators also worry about the imperfect fit between law and science, as well as the ability of lay judges and juries to evaluate expert evidence that is needed exactly because the issues are outside the competency of lay people.[13]

Overall, "a century's worth of writing about expert evidence circles around the same themes and consistently reaches the same conclusion: that the use of party selected expert witnesses in an adversarial legal system is fraught with difficulties."[14] These problems are equally applicable to patent litigation. As far back as 1894, United States Supreme Court Justice David Brewer proposed in the pages of the *Yale Law Journal* "prohibit[ing] all expert testimony in patent cases" because "[t]hey are expensive" and "[t]heir testimony [always] supports the party who calls them."[15]

This background makes the trend in patent law in recent years toward *greater* reliance on the PHOSITA quite surprising. A consequence of the Supreme Court's increased engagement with patent law over the past decade has been expanding the role of the PHOSITA by introducing the concept into new areas of patent law, placing greater emphasis on the PHOSITA where it was already used, assigning more tasks to the PHOSITA, and placing less constraints on the PHOSITA.[16] Commentators have largely supported the Supreme Court's expansion of the PHOSITA perspective, with some suggesting an even greater role for the PHOSITA beyond that already adopted by the Supreme Court.[17]

---

11. Strom, *supra* note 2 (quoting Professor David Schwartz recounting this anecdote).

12. *See infra* Part II.A (discussing the relationship of the PHOSITA and expert witnesses).

13. *See infra* Part II.B (describing the several well-recognized problems with experts in patent litigation).

14. Jennifer L. Mnookin, *Expert Evidence, Partisanship, and Epistemic Competence*, 73 BROOK. L. REV. 587, 588 (2008).

15. D.J. Brewer, *The Patent System*, 3 YALE L.J. 149, 155–56 (1894).

16. *See infra* Part I.B.1 (discussing the Supreme Court's expansion of PHOSITA over the last ten years).

17. *See infra* Part I.B.2 (noting that academic commentary is generally in line with the Supreme Court's increased emphasis on the PHOSITA in patent litigation).

To some extent, this trend ignores that greater reliance on the PHOSITA necessarily means greater reliance on expert witnesses—and the problems they cause. Or, worse, some in the patent community glorify expert witnesses as protecting against lay judges and juries bungling patent cases.[18] More sophisticated observers recognize the downside of greater reliance on the PHOSITA, and therefore expert witnesses, but still largely endorse this trend in patent law.[19] They emphasize the importance of accuracy in terms of the technical merits of patent cases, believing that, despite its shortcomings, the PHOSITA perspective will optimize fidelity to the technical merits.[20] In essence, these commentators assume that even if lay decision makers prevent the patent system from achieving the ideal of perfect technical fidelity, the best outcome is to approach this first-best state as closely as possible by using the PHOSITA's perspective.

Economic principles suggest, however, that when a first-best outcome is impossible because of some constraint—in this case, lay decision makers—the second-best outcome is not necessarily to approach the first-best outcome as closely as possible.[21] Doing so can introduce more problems, such as the costs, bias, and inaccuracy that accompany expert witnesses. Rather, a second-best outcome might require a different approach that fully accounts for the constraints (i.e., lay decision makers) that prevent achievement of the first-best outcome.[22] Viewed in this light, the trend toward greater reliance on the PHOSITA seems like an ill-advised effort to approximate the first-best outcome of technical fidelity. Those advocating greater reliance on the PHOSITA underestimate the constraints imposed by lay decision makers.

If the ideal outcome of the patent system is perfect technical fidelity, and lay decision makers hinder this outcome, the obvious solution is to remove or minimize lay decision makers. Proposals to increase the technical competence of decision makers abound in patent litigation, including: the use of court-appointed experts, technical advisors, or

18. *See infra* Part II.C (noting that when laypersons are confronted with technical information there is a risk that they will overrely on expert testimony).

19. *See infra* Part II.C (discussing that some commentators see expert witnesses as a necessary evil).

20. *See infra* Part II.C (describing the concerns surrounding the use of the POSHITA perspective and suggestions for mitigating those concerns).

21. *See infra* Part II.C (hypothesizing that the increasing reliance on the PHOSITA in patent litigation is an example of incomplete first-best theorizing).

22. *See infra* Part II.C (discussing why it might be necessary to change variables to achieve a second-best state of affairs).

special masters; the use of specialized judges and juries with technical training; and the shifting of more decision making to the comparative experts in the United States Patent and Trademark Office. Over a century's worth of experience with similar proposals in the law and science literature, and at least decades of experience in patent litigation, suggests that these proposals will have, at best, a limited impact.[23]

If lay decision makers are here to stay in patent litigation, the second-best outcome might be to tailor the doctrines applied in patent litigation to reflect the capabilities of those decision makers. This Article proposes some design principles for doing so: replacing technical doctrines heavily dependent on the PHOSITA with more legalistic doctrines; eliminating the PHOSITA from some areas of patent law; making the PHOSITA's role narrower and more constrained; and increasing the objectivity of patent law doctrines.[24] To be clear, these proposals are for patent litigation. The same considerations are not necessarily warranted for the technically trained decision makers in the Patent Office. Other work has suggested the need to decouple patent law and apply different rules, standards, and tests tailored to the different contexts and decision makers of patent litigation in the courts and patent acquisition in the Patent Office.[25]

Consistent with the theme of the *Loyola University Chicago Law Journal*'s Symposium, "Decisions, Decisions: Exploring Factors that Affect the Judicial Decision-Making Process," this Article focuses primarily on the difficulties the PHOSITA perspective creates for district judges. Of course, the decision makers in patent litigation are both lay judges and lay juries. Because the problems that lay judges and lay juries face relating to the scientific and technical issues are largely the same,[26] this Article treats discussions of the issues for judges and juries as interchangeable. With that said, the problems for district judges have a greater impact in patent litigation, as judges make far more decisions than juries do. Only 2.8 percent of patent cases reach trial[27]—29 percent of

23. *See infra* Part III.A (discussing reasons why the history of patent litigation suggests that the proposals will not succeed).

24. *See infra* Part III.B (discussing the possible design of a second-best approach to patent law tailored to the capabilities of lay decision makers).

25. Greg Reilly, *Decoupling Patent Law*, 97 B.U. L. REV. (forthcoming 2017) (manuscript at 1), https://ssrn.com/abstract=2854375.

26. Lee, *supra* note 5, at 16–17.

27. Mark A. Lemley, *Where to File Your Patent Case*, 38 AIPLA Q.J. 401, 411–13 (2010) (analyzing districts with twenty-five or more outcomes).

which are bench trials.[28] By contrast, 3.3 percent of patent cases are resolved by a judge on summary judgment,[29] much less the vast number of patent cases in which the judge denies summary judgment or grants it in part in a nondispositive way. And even jury trials require the judge to be equally engaged in the technical issues to resolve the admissibility of expert testimony (i.e., *Daubert* motions), make evidentiary rulings, and resolve motions for judgment as a matter of law or for a new trial.[30]

Part I surveys the role of the PHOSITA in patent litigation, including the recent increase in emphasis in Supreme Court decisions and academic commentary. Part II discusses the problems the PHOSITA introduces into patent litigation due to the need for expert testimony. Part III considers possible solutions.

I. THE PHOSITA AND PATENT LITIGATION

Reliance on the technical perspective of the "person having ordinary skill in the art," or "PHOSITA," pervades patent law. After a period of relative de-emphasis, the PHOSITA has seen a resurgence in recent years, with cases assigning the PHOSITA an even greater role. The resurgence of the PHOSITA reflects a sense in the patent community that patent law had strayed from the technical aspects of patents in favor of more legalistic and formalistic approaches. Many commentators believe that greater reliance on the PHOSITA will make patent law a better fit for its technical subject.

A. The PHOSITA in Patent Litigation

Patent law relies heavily on "the measurement of some legal parameter against the skill and knowledge of the PHOSITA," or "person having ordinary skill in the art."[31] "In almost every area of patent law, the court or jury should view the issues from the perspective of the PHOSITA, not that of a lawyer or layperson."[32]

The PHOSITA is roughly someone with common skill level in the technical field of the invention.[33] But the PHOSITA is not an actual

28. John R. Allison et al., *Understanding the Realities of Modern Patent Litigation*, 92 TEX. L. REV. 1769, 1779 (2014).

29. Daniel M. Klerman & Greg Reilly, *Forum Selling*, 89 S. CAL. L. REV. 241, 312 (2016).

30. *See* Jeanne C. Fromer, *Patentography*, 85 N.Y.U. L. REV. 1444, 1470 (2010) (describing the role of district judges in patent cases).

31. Burk & Lemley, *supra* note 1, at 1187.

32. Holbrook, *supra* note 6, at 781.

33. Burk & Lemley, *supra* note 1, at 1189.

person and does not reflect the knowledge or abilities of any actual real-world individual.[34] Like "reasonable person" standards in other areas of law, the PHOSITA is a legal construct not dependent on the subjective knowledge or abilities of any given person, such as the inventor.[35]

The PHOSITA's "ubiquitous" presence in patent law is justified on several grounds.[36] First, as a formalist matter, the patent statute explicitly requires some decisions to be made based on the conclusion that would be reached by "a person having ordinary skill in the art to which the claimed invention pertains."[37] Second, and more functionally, the PHOSITA arguably allows entitlement to a patent to turn on an objective legal baseline, rather than varying depending on the actual abilities of the inventor.[38] Third, reliance on the PHOSITA is said to be necessary to reflect the dual nature of patent documents and doctrines as both legal and technical. While the lawyers and judges that dominate the patent system are capable of evaluating the legal aspects on their own, the PHOSITA perspective provides a mechanism by which they can account for the technical nature of patents.[39] Fourth, and relatedly, reliance on the PHOSITA is said to avoid the necessity of having judges, juries, or other decision makers who are personally trained in the field of the invention.[40] Finally, the use of the PHOSITA arguably provides needed flexibility to patent law—which is generally uniform across technical area—by allowing some measure of tailoring or adjusting of patent law doctrines to specific technical contexts.[41]

But reliance on the PHOSITA in patent litigation also creates problems. Because the use of the PHOSITA requires more direct engagement with the technical nature of patents, it is more difficult for lay decision makers to apply, raising both decision and error costs.[42] By contrast, the PHOSITA standard is more reliably applied during patent examination, where the decision makers are technically trained patent examiners.[43] These patent examiners are more likely, than lay judges or

34. *Id.* at 1187.
35. *Id.* at 1187–89.
36. Holbrook, *supra* note 6, at 781.
37. 35 U.S.C. § 103 (2011) (describing how to make a proper determination of obviousness); *see also* 35 U.S.C. § 112(a) (2015) (describing a similar test for patent disclosure).
38. Burk & Lemley, *supra* note 1, at 1187–89.
39. Holbrook, *supra* note 6, at 781.
40. Burk & Lemley, *supra* note 1, at 1187–89.
41. *Id.* at 1191.
42. Holbrook, *supra* note 6, at 807; Reilly, *supra* note 25 (manuscript at 34).
43. Reilly, *supra* note 25 (manuscript at 46).

juries, to approach the knowledge and abilities of the PHOSITA, or at least have a better informed basis on which to evaluate evidence presented on this issue.[44]

B. The Recent Resurgence of the PHOSITA in Patent Litigation

Although the PHOSITA has long been a part of patent law, there is a recent trend to reinvigorate the PHOSITA's prominence.[45] This trend is apparent both in recent Supreme Court cases and in an increasing amount of academic commentary.[46] The trend has taken various forms, including an expansion into areas of patent law from which the PHOSITA was previously absent, an increased emphasis on the PHOSITA in areas where it was only formally present, an expansion in the tasks assigned to the PHOSITA, and a removal of constraints on the PHOSITA's perspective.

1. The Supreme Court's Expansion of the PHOSITA's Role

The Supreme Court's increased engagement with patent law over the past ten years has been a prime contributor to the reinvigoration of the PHOSITA. In *KSR International Co. v. Teleflex, Inc.*, the Supreme Court significantly expanded the role of the PHOSITA in determining whether an invention is invalid as "obvious," that is, too trivial an advance over what already existed to warrant a patent.[47] A key question in making this determination is whether an invention that combines existing components in a new way is obvious. Prior to *KSR*, the Federal Circuit required that the prior art (i.e., existing knowledge in the field) provide some teaching, suggestion, or motivation to combine, often requiring that this be explicit in a written prior art reference.[48] Although this determination was made from the PHOSITA's perspective, the task assigned to the hypothetical PHOSITA was minimal: simply reading the prior art references to identify any statement that would provide a reason to combine the prior art elements.[49] Under this framework, the PHOSITA has been described "as a bit of a 'dullard,' aware of the art but devoid of creativity or

44. *Id.*

45. Holbrook, *supra* note 6, at 808.

46. *See infra* Parts II.B.1–2 (evaluating the PHOSITA in the context of problems with reliance on expert witnesses).

47. KSR Int'l. Co. v. Teleflex Inc., 550 U.S. 398, 421–22 (2007).

48. Daralyn J. Durie & Mark A. Lemley, *A Realistic Approach to the Obviousness of Inventions*, 50 WM. & MARY L. REV. 989, 994–95 (2008).

49. Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 889 (2004).

inventive skills."[50]

KSR adopted a more flexible and open-ended approach to obviousness that considered a wider variety of factors, including the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art."[51] *KSR* expanded the role of the PHOSITA in the obviousness determination, treating the PHOSITA "as someone who solves problems by applying a reasonable amount of ingenuity" and allowing obviousness to be based on the PHOSITA's "ordinary creativity in solving known problems," not just explicit "suggestions or motivations to combine existing references."[52] The result is a "resuscitation" and "invigoration of the PHOSITA in this context" that arguably "suggests that the Court disagrees with the Federal Circuit's broader efforts to remove or minimize her knowledge from other patent law doctrines."[53]

In *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, the Supreme Court likewise emphasized the importance of the PHOSITA's perspective in claim construction—the interpretation of the short paragraphs at the end of the patent that define the patentee's exclusive rights.[54] A long-standing precept of claim construction is that patent claim terms must be given "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention."[55] Despite the PHOSITA's formal role in claim construction, it had a limited functional impact. Federal Circuit cases virtually never discussed the PHOSITA and often favored intrinsic evidence from the patent document itself over extrinsic evidence about the PHOSITA's background knowledge and understanding.[56]

In holding that the Federal Circuit must defer to the district court on the evidentiary underpinnings of claim construction, *Teva* seemed to emphasize the PHOSITA's background knowledge and understanding more than the Federal Circuit case law.[57] The Court suggested that claim

50. Durie & Lemley, *supra* note 48, at 1001.

51. *KSR*, 550 U.S. 398 at 1740–41.

52. Durie & Lemley, *supra* note 48, at 1001–02.

53. Holbrook, *supra* note 6, at 811; *see also* Durie & Lemley, *supra* note 48, at 1001 (noting "the role of the PHOSITA will expand" after *KSR*).

54. 135 S. Ct. 831, 841, 851 (2015).

55. Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

56. J. Jonas Anderson & Peter S. Menell, *Informal Deference: A Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 NW. U. L. REV. 1, 43–48, 55–56 (2013).

57. *See, e.g.*, Dennis Crouch, Teva v. Sandoz*: Partial Deference in Claim Construction*,

construction might require "look[ing] beyond the patent's intrinsic evidence . . . to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period."[58] Some have concluded that the Court endorsed an approach to claim construction that begins by determining the "meaning to a person of ordinary skill in the art at the time of the invention" and only then looks at the intrinsic evidence from the patent to determine if the PHOSITA "would ascribe that same meaning to that term *in the context of the specific patent claim under review*."[59]

Finally, in *Nautilus, Inc. v. Biosig Instruments, Inc.*, the Supreme Court introduced the PHOSITA's perspective into an area of patent law in which it had been essentially dormant.[60] Under 35 U.S.C. § 112(b), patent claims must be "definite" to insure adequate public notice of the patent rights and therefore must "particularly point[] out and distinctly claim[] the subject matter which the inventor or a joint inventor regards as the invention."[61] Prior to *Nautilus*, the Federal Circuit held that claims were indefinite only if they were not "amenable to construction" or "insolubly ambiguous"; claims were sufficiently definite as long as a "court c[ould] ascribe *some* meaning to a patent's claims."[62]

Because this test depended on claim construction, and claim construction was judged from the PHOSITA's perspective, this test was not completely divorced from the PHOSITA. But the Federal Circuit's approach depended on the perspective and abilities of "a court viewing matters *post hoc*," not "the understanding of a skilled artisan at the time of the patent application."[63] *Nautilus* rested the definiteness doctrine squarely on the PHOSITA's shoulders, "hold[ing] that a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, *those skilled in the art* about the scope of the

PATENTLYO (Jan. 20, 2015), http://patentlyo.com/patent/2015/01/partial-deference-construction.html (suggesting that after *Teva* there is likely to be greater emphasis on extrinsic evidence of the PHOSITA's understanding at the time of the invention).

58. *Teva*, 135 S. Ct. at 841.

59. *Id.*; *see also* Jason Rantanen, Teva, Nautilus, *and Change Without Change*, 18 STAN. TECH. L. REV. 375, 392 (2015) (interpreting *Teva* as endorsing this approach).

60. 134 S. Ct. 2120 (2014).

61. 35 U.S.C. § 112(b).

62. *Nautilus*, 134 S. Ct. at 2130.

63. *Id.*

invention."[64]

2. Academic Support for the Expansion of the PHOSITA's Role

The academic commentary is generally in line with the Supreme Court's increased emphasis on the PHOSITA in patent litigation. Leading commentators have applauded *KSR's* expanded role for the PHOSITA in obviousness.[65] Likewise, commentators both before[66] and after[67] *Teva* have encouraged greater use of the PHOSITA's perspective in claim construction. And the Court's emphasis on the PHOSITA in indefiniteness has also been favorably received by academics.[68]

More generally, Professor Tim Holbrook has criticized existing doctrines as "result[ing] in an over-discounting of the views of technologists, as represented in the PHOSITA."[69] Holbrook argues for greater "opportunity for the views of the PHOSITA to be considered" in patent law.[70] Holbrook and others have called for greater reliance on the PHOSITA in determining whether a patent claims patent-eligible subject matter under 35 U.S.C. § 101,[71] whether a patent enables a person in the

64. *Id.* at 2124 (emphasis added).

65. *See, e.g.*, Durie & Lemley, *supra* note 48, at 1003 ("As a general matter, we think the increased focus on a real-world, creative PHOSITA is a salutary development."); *see also* Holbrook, *supra* note 6, at 810–11 (describing favorably "[t]he Supreme Court's resuscitation of the PHOSITA" in *KSR*); Sean B. Seymour, *Heightened Enablement in the Unpredictable Arts*, 56 UCLA L. REV. 127, 134–35 (2008) (describing favorably that "the post-*KSR* PHOSITA is not a plodder but a creative individual").

66. *See, e.g.*, J. Jonas Anderson & Peter S. Menell, *Informal Deference: A Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 NW. U. L. REV. 1, 43–48, 55–56 (2013) (advocating for "greater emphasis on skilled artisans, inventors, patent attorneys, and patent agents in tracing the drafting of patent claim terms and their understanding to skilled artisans in the context of the particular patent"); Kristen Osenga, *Linguistics and Patent Claim Construction*, 38 RUTGERS L.J. 61, 101–02 (2006) (arguing that the PHOSITA should be the focus of claim construction).

67. *See* Crouch, *supra* note 57 (suggesting greater use of extrinsic evidence to reflect PHOSITA perspective).

68. *See* J. Jonas Anderson & Peter S. Menell, *Restoring the Fact/Law Distinction in Patent Claim Construction*, 109 NW. U. L. REV. ONLINE 187, 199–200 (2015) (describing favorably the increased need for consultation of PHOSITA's understanding after *Nautilus*).

69. Holbrook, *supra* note 6, at 784; *see also* Craig Allen Nard & John F. Duffy, *Rethinking Patent Law's Uniformity Principle*, 101 NW. U. L. REV. 1619, 1644 (2007) ("[T]here is a growing sense among court watchers and patent players that the Federal Circuit has fallen out of rhythm with some of the technological communities its decisions affect because the court has retreated into its own legal formalisms at the expense of gaining a good understanding of industrial and technological needs.").

70. Holbrook, *supra* note 6, at 783.

71. Timothy R. Holbrook & Mark D. Janis, *Patent-Eligible Processes: An Audience Perspective*, 17 VAND. J. ENT. L. & PRAC. 349, 363 (2015) (noting critically that "patent law's most common trope, the hypothetical person having ordinary skill in the art, has been accorded no place in the Supreme Court's modern eligibility cases").

field to make and use the invention under 35 U.S.C. § 112,[72] and whether the patent provides a written description showing that the inventor possessed the claimed invention under 35 U.S.C. § 112.[73]

C. Understanding the PHOSITA's Resurgence

The renewed emphasis on the PHOSITA, both in Supreme Court cases and the academic commentary, is a direct result of dissatisfaction with the Federal Circuit's stewardship of patent law. Commentators have criticized the Federal Circuit's de-emphasis of the PHOSITA in claim construction for rendering the interpretation of patent claims overly legalistic and divorced from their technological context.[74] Similarly, commentators have praised *KSR*'s increased emphasis on the PHOSITA as an appropriate response to the Federal Circuit's "too-rigid application of rules designed to prevent hindsight bias [that] had led to a number of results that defied common sense."[75]

More generally, the Federal Circuit has been accused of "discount[ing] the role of the PHOSITA" and "attempt[ing] to speak the death of the PHOSITA" because it "view[s] patents as merely legal, not technical, texts."[76] "To effect this approach, the court has articulated a variety of formalistic legal rules that are far more accessible to a layperson but minimize the importance of the patent's technical component."[77]

Criticism of the Federal Circuit's de-emphasis of the PHOSITA is consistent with the more general trend of blaming problems with the patent system on the Federal Circuit, particularly "its overly formalistic rule-based adjudication in patent cases."[78] The Federal Circuit's penchant for formalistic and legalistic rules in patent cases has been variably explained as reflecting an overemphasis on the importance of

72. Holbrook, *supra* note 6, at 792 (criticizing as "particularly egregious" the fact that "the Federal Circuit has removed considerations of the PHOSITA from assessing the sufficiency of patent disclosures under the written description and enablement doctrines").

73. Holbrook & Janis, *supra* note 71, at 115 (arguing that "a far more robust incarnation of the PHOSITA is needed" in written description); *see also* Holbrook, *supra* note 6, at 792 (criticizing as "particularly egregious" the fact that "the Federal Circuit has removed considerations of the PHOSITA from assessing the sufficiency of patent disclosures under the written description and enablement doctrines").

74. Holbrook, *supra* note 6, at 791.

75. Durie & Lemley, *supra* note 48, at 991.

76. Holbrook, *supra* note 6, at 782.

77. *Id.* at 783.

78. David O. Taylor, *Formalism and Antiformalism in Patent Law Adjudication: Rules and Standards*, 46 CONN. L. REV. 415, 419–20 (2013) (describing, but not endorsing, criticism).

uniformity in patent law;[79] an overemphasis on the public notice function of the patent document;[80] or an effort to "reduce[] the degree to which lay judges must engage with technological subject matter."[81] It has been criticized for elevating these other values over the technical aspects of the patent document[82] and minimizing the importance of "gaining a good understanding of industrial and technological needs."[83]

The Federal Circuit's approach does have its defenders, even if they represent the minority view. For example, Professor Peter Lee has suggested that the Federal Circuit's formalism provides heuristics that allow lay judges to reduce the information costs of parsing complex technology.[84] Similarly, Professor David Taylor has argued that "rule-based adjudication may seem appropriate for decision making by juries and some judges in patent cases, at least to the extent these cases involve highly complex, technical subject matter" beyond the lay decision makers' background understanding.[85]

On the whole, however, the Federal Circuit's preference for formalistic, legal rules has been criticized for overemphasizing other values, such as public notice, uniformity, and ease of application, and underemphasizing the importance of accuracy in terms of fidelity to the technical merits of the invention.[86] Specifically, the Federal Circuit's de-emphasis of the PHOSITA is said to undermine technically accurate outcomes by treating what is a mixed legal and technical document as purely legal.[87] At its core, the recent trend in patent law to increase the role of a PHOSITA reflects a desire to improve the accuracy of patent adjudication vis-à-vis the technical merits.[88]

---

79. Rochelle C. Dreyfuss, *Percolation, Uniformity, and Coherent Adjudication: The Federal Circuit Experience*, 66 SMU L. REV. 505, 512 (2013).

80. Holbrook, *supra* note 6, at 808 (contending that the de-emphasis of the PHOSITA "ignores that documents do contain technical aspects to them, and that the representations made in them as a technical matter may not have the same import that the courts are affording them as a legal matter").

81. Lee, *supra* note 5, at 7.

82. Holbrook, *supra* note 6, at 782–83.

83. Craig Allen Nard & John F. Duffy, *Rethinking Patent Law's Uniformity Principle*, 101 NW. U. L. REV. 1619, 1644 (2007).

84. Lee, *supra* note 5, at 41.

85. Taylor, *supra* note 78, at 483.

86. Dreyfuss, *supra* note 79, at 509, 519; *see also* Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 8 (1989) (characterizing "accuracy" in patent law as reflecting "the needs of inventors" and "the practicalities of technology development").

87. Holbrook, *supra* note 6, at 808.

88. Durie & Lemley, *supra* note 48, at 1003 ("Applied properly, a PHOSITA-based approach

II. THE PHOSITA PROBLEM IN PATENT LITIGATION

There is a core problem with widespread reliance on the PHOSITA in patent law: the American patent system relies on lay judges and juries to decide patent disputes. These decision makers must decide the case as a PHOSITA would, not as the judges or jurors themselves would.[89] "Within the judicial system . . . no one is truly a PHOSITA."[90] Therefore, reliance on the PHOSITA requires that "the fact finder channel the beliefs of someone whose expertise they do not usually possess."[91] "[I]t is difficult for the non-scientific district court judge, with limited experience in patent cases, to put himself into the shoes of an ordinary scientist."[92]

This difficulty casts serious doubt on the trend toward greater reliance on the PHOSITA in patent law.[93] Lay decision makers must rely on external evidence of the knowledge and abilities of the PHOSITA, primarily expert testimony plagued by a series of problems well recognized in the evidence literature. Patent scholars who recognize this problem tend to treat it as inevitable, assuming that patent law must approach as closely as possible the technically sound decision a PHOSITA would make. To the contrary, if an ideal or first-best state is impossible—such as perfect technical fidelity in light of the lay decision makers in patent litigation—the best response is not always to approach the first-best state as closely as possible. Rather, a second-best solution that better reflects actual conditions might be preferable.

A. The Relationship of the PHOSITA and Expert Witnesses

Because the decision makers in patent litigation are lay judges and jurors, not experts in the relevant field, technical "[e]xpertise is always external."[94] Thus, extrinsic evidence "typically is the manner by which the views of the PHOSITA enter the calculus" in patent litigation.[95]

---

to obviousness will point courts toward the 'right' answer . . . .").

89. Envtl. Designs, Ltd. v. Union Oil Co. of Cal., 713 F.2d 693, 697 (Fed. Cir. 1983).

90. Holbrook, *supra* note 6, at 781–82. Even most of the judges of the U.S. Court of Appeals for the Federal Circuit, which has nationwide appellate jurisdiction in patent cases, lack technical training. *Id.*

91. Fromer & Lemley, *supra* note 7, at 1282.

92. Kristen Osenga, *Linguistics and Patent Claim Construction*, 38 RUTGERS U. L.J. 61, 102–03 (2006); *see also* Burk & Lemley, *supra* note 1, at 1196 ("[J]udges are at a rather serious disadvantage in trying to put themselves in the shoes of an ordinarily skilled scientist.").

93. *See* Fromer & Lemley, *supra* note 7, at 1283 (suggesting studies showing "individuals generally struggle to model people dissimilar from themselves . . . cast some doubt on how well lay fact finders can model experts (i.e., PHOSITAs) as the audience in IP infringement").

94. Michael Burstein, *Rules for Patenting*, 52 WM. & MARY L. REV. 1747, 1788 (2011).

95. Holbrook, *supra* note 6, at 815.

This extrinsic evidence sometimes takes the form of expert resources like textbooks, scientific journal articles, or technical dictionaries published contemporaneously with the invention.[96] But most typically, it is testimony by expert witnesses created specifically and solely for the pending litigation.[97] This is unsurprising. Contemporaneous texts are unlikely to directly address the relevant questions in dispute in the litigation, such as whether this particular invention would have been obvious to a PHOSITA or whether this particular patent enabled a PHOSITA to make and use the invention. Rather, the parties must commission expert witnesses to study, report on, and testify about these precise questions. Thus, greater reliance on the PHOSITA's perspective necessarily equates with "greater reliance on expert testimony regarding what those of skill in the art would have known and been capable of developing."[98]

Expert witnesses already play a prominent role in patent litigation. Although "the Federal Circuit has not articulated a per se rule that expert opinion testimony is required," it has concluded that "expert testimony is 'typically' necessary in patent cases involving complex technology."[99] In some patent cases, a court might regard the absence of expert testimony as a failure of proof.[100] As a result, patent litigation almost always involves expert witnesses testifying on technical issues.[101] Indeed, "[i]t is axiomatic that technical experts are virtually a *sine qua non* for patent litigation."[102] Beyond being common, expert witnesses are normally the most important witnesses in patent cases.[103] Patent

96. Fromer & Lemley, *supra* note 7, at 1282; *see also* Phillips v. AWH Corp., 415 F.3d 1303, 1318 (Fed. Cir. 2005) (en banc) ("Because dictionaries, and especially technical dictionaries, endeavor to collect the accepted meanings of terms used in various fields of science and technology, those resources have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention.").

97. Fromer & Lemley, *supra* note 7, at 1267; Holbrook, *supra* note 6, at 815.

98. Durie & Lemley, *supra* note 48, at 1001 (making this observation in the context of obviousness).

99. James Ware, *Patent Rules of Evidence*, 23 SANTA CLARA COMPUTER & HIGH TECH. L.J. 749, 757 (2007); *see also* FED. R. EVID. 701 (prohibiting testimony from nonexperts if the testimony is based on "scientific, technical, or other specialized knowledge within the scope of Rule 702").

100. *Id.*

101. John P. Fry, *Helping Clients Navigate the Unfamiliar Waters of Patent Litigation*, *in* PATENT LITIGATION AND DISPUTE RESOLUTION 39, 47 (Aspatore ed., 2007).

102. Edward G. Poplawski, *Selection and Use of Experts in Patent Cases*, 9 FED. CIR. B.J. 145, 145 (1999).

103. Richard A. Cederoth, *Preparing for Patent Litigation*, *in* PATENT LITIGATION AND DISPUTE RESOLUTION, *supra* note 101, at 106.

cases often devolve into a battle of the experts, with very few fact witnesses and a number of competing expert witnesses.[104] The recent trend toward increased reliance on the PHOSITA will exacerbate the expert-centric nature of patent litigation.

B. The Problem with Expert Witnesses

In other areas of law, expert evidence has been seen as "problematic from just about the moment of its invention" and "criticized for a remarkably long time."[105] Even more positive evaluations of expert evidence only contend that the problems are not as extreme as is frequently claimed or that there is no other viable option.[106] They do not deny the existence of several well-recognized problems with experts in litigation generally, problems that are equally present (or even more severe) in patent litigation.

The most obvious problem with expert witnesses is that they raise the direct costs of litigation.[107] The experts themselves are paid, normally quite handsomely.[108] The extensive involvement of the hiring attorney in the expert's preparation, report, and testimony increases the costs, as virtually every minute of expert time is matched by a minute of attorney time and, of course, time is money.[109] Commentators evaluating patent litigation specifically have noted the high costs resulting from its heavy reliance on expert witnesses.[110] The increased direct costs that stem from expert witnesses are particularly worrisome in patent litigation, which suffers from disproportionately higher litigation costs than other areas of

104. *See* Anthony J. Fitzpatrick, *Winning Patent Cases in a Challenging Legal Environment*, *in* LITIGATION STRATEGIES FOR INTELLECTUAL PROPERTY CASES: LEADING LAWYERS ON ADAPTING TO NEW TRENDS, IMPROVING COURTROOM TACTICS, AND UNDERSTANDING THE IMPACT OF RECENT DECISIONS 91, 98 (Aspatore rev. ed. 2011) (providing a representative example of a recent "trial where each side had five experts, and there was only one fact/non-expert witness who was called to testify in the courtroom"); Ware, *supra* note 99, at 757 (noting that expert witnesses "play important roles in all aspects of patent litigation" but that "[p]atent trials are not characterized by large numbers of [lay or fact] witnesses" and most patent issues require "the testimony of a small number of [fact or lay] witnesses").

105. Mnookin, *supra* note 14, at 1009.

106. Samuel R. Gross, *Expert Evidence*, 1991 WIS. L. REV. 1113, 1115.

107. *See* Jeffrey L. Harrison, *Reconceptualizing the Expert Witness: Social Costs, Current Controls and Proposed Reforms*, 18 YALE J. ON REG. 253, 260 (2001) (noting that the use of experts can raise the cost of litigation).

108. Gross, *supra* note 106, at 1138.

109. *Id.* at 1138–47.

110. Peter J. Curtin, *Securing and Enforcing Patent Rights*, *in* PATENT LITIGATION AND DISPUTE RESOLUTION, *supra* note 101, at 119–20 ("The fees and costs associated with expert witnesses are often a significant piece of the total cost of the [patent] litigation.").

law.[111]

Even if the use of expert witnesses raises litigation costs for the parties, it could reduce total decision costs if it simplifies matters for the decision maker—but this is doubtful. Each party will offer testimony from experts that "will be used to oppose each other with the effect of canceling each other out. . . . If together the testimony does little or nothing to move the jurors closer to the truth, there is a net loss—resources expended with no advancement in the 'truth-seeking' objective."[112] Moreover, as discussed in more detail below, it is difficult for lay decision makers to evaluate expert testimony on subjects that are beyond their knowledge and experience (and therefore require expert testimony in the first place).[113] To the extent the use of expert witnesses reduces decision costs for decision makers, it is likely because they are resolving the case based on proxies—like the demeanor or testifying ability of the expert—rather than the actual substance or merits.[114]

This raises a major concern with expert evidence. An increase in decision costs might be warranted if expert witnesses improve the accuracy of resolution and thereby reduce error costs. But commentators have identified several reasons to be skeptical of whether litigation experts actually reduce error costs.

1. Adversarial Bias

A core concern with the ability of expert witnesses to increase accuracy and reduce error costs is that expert witnesses in American litigation are generally selected, presented, and paid by one of the parties to the litigation. Parties have the incentive to hire experts who will increase the party's chance of winning, not provide the most accurate testimony.

> What a particular party views as the greatest value for its dollar—effective expert testimony that persuades the factfinder—will often not be commensurate with what a more systemic perspective would see as most valuable, which would presumably be careful, accurate expert testimony rather than testimony most persuasive to a nonexpert.[115]

Thus, the use of experts that are called and paid by one party creates an

111. Greg Reilly, *Linking Patent Reform and Civil Litigation Reform*, 47 LOY. U. CHI. L.J. 179, 197–98 (2015).

112. Harrison, *supra* note 107, at 263–64.

113. *See infra* Part II.B.2 (describing how laypeople lack the sufficient expertise to determine bias among expert witnesses).

114. *See supra* text accompanying note 112 (recognizing the potential that experts could reduce decision costs).

115. Mnookin, *supra* note 14, at 1011.

inherent danger of bias.[116]

This adversarial or partisan bias can come in at least four forms. First, expert witnesses might be consciously biased and "literally offer themselves for hire, selling their opinions and their credentials to anyone who meets their price."[117] The fact that attorneys have the ability to shop from a pool of expert witnesses inevitably results in the risk that an expert witness will be a consciously biased "hired gun.[118] Second, the expert witness might suffer from an unconscious bias by siding with, and slanting one's testimony in favor of, the hiring party.[119]

Third, expert testimony is shaded by "selection bias" that results from the fact that the expert was specifically retained and hired by a party not to present an objective view and represent a random sample of expert opinions, but rather to present the view of the party that hired the expert.[120] "An expert witness need not have any previous contact with a case" and normally "any minimally qualified practitioner of the expert discipline at issue is eligible to testify," which gives "the parties unparalleled power to select their witnesses from a large pool, and to do so on the basis of the content and the manner of their testimony."[121]

Fourth, partisan bias is likely to cause experts to state their conclusions with a higher degree of certainty than is warranted (e.g., "is" or "is not," rather than "probably is not" or "might be"), as lawyers "encourage their expert witnesses to talk in strong, unambiguous terms and . . . choose those experts who are likely to do so anyway or [are] willing to take direction."[122]

The problems of adversarial or partisan bias are equally as applicable to patent litigation as other areas. Court-appointed or neutral experts are rarely used in patent litigation,[123] meaning that experts are almost always selected and paid by the parties.

116. *Id.* at 1010.

117. *Id.* at 1011–12; *see also* David E. Bernstein, *Expert Witnesses, Adversarial Bias, and the (Partial) Failure of the* Daubert *Revolution*, 93 IOWA L. REV. 451, 455 (2008) (explaining how it is difficult for opposing counsel to discredit an expert witness paid for testimony).

118. Bernstein, *supra* note 117, at 454–55.

119. Mnookin, *supra* note 14, at 1011–12.

120. Bernstein, *supra* note 117, at 456.

121. Gross, *supra* note 106, at 1127–28.

122. Jennifer L. Mnookin & Samuel R. Gross, *Expert Information and Expert Evidence: A Preliminary Taxonomy*, 34 SETON HALL L. REV. 141, 187 (2003).

123. Poplawski, *supra* note 102, at 183; Strom, *supra* note 2.

2. Lay People Judging Expert Evidence

Use of expert witnesses also presents an "essential paradox": parties call expert witnesses to testify and present opinions about matters beyond the ordinary understanding of lay people, and then the legal system requires lay judges and jurors to evaluate the experts' testimony.[124] But how can lay judges and jurors accurately judge the experts' opinions, or even expertise in the field, if the matters are beyond their knowledge and understanding?[125] And because lay judges and juries lack the necessary expertise, one cannot expect them to accurately evaluate partisan bias.[126]

To be sure, expert witnesses do not offer a conclusion or opinion alone but instead identify evidence and reasoning on which that opinion is based. But because that evidence and reasoning will tend to be highly technical and rely on background assumptions—beyond the knowledge of lay decision makers—judges and juries will, at best, have an incomplete understanding of the basis for the conclusion or opinion.[127] "Even to know what evidence is relevant to a claim, after all, let alone to judge how strong or how weak that evidence is, *requires substantive knowledge of the subject-matter*."[128] This problem is particularly acute with subjective expert testimony that is "based solely on an expert's experience and training," not any objective basis.[129] As a result of experts' use of subjective criteria and the lack of objective criteria, it is extremely difficult for lay judges and juries to evaluate experts with similar credentials and "ascertain whether the proffered expert has applied his experience reliably to the facts of the case or whether the expert is a hired gun or an outlier."[130]

The result is that instead of evaluating expert testimony on its merits or substance, lay judges and juries are left to rely on secondary criteria like demeanor, credentials, and superficial explanatory plausibility.[131] Further, these criteria do not correlate with technical merit or accurate results because attorneys can, and do, shop for experts that will best satisfy these criteria and be most appealing to judges and jurors.[132] As a

124. Gross, *supra* note 106, at 1182.
125. Mnookin, *supra* note 14, at 1014.
126. *Id.*
127. Susan Haack, *The Expert Witness: Lessons from the U.S. Experience*, 28 HUMANA.MENTE 39, 44 (2015).
128. *Id.*
129. Bernstein, *supra* note 117, at 480.
130. *Id.* at 486.
131. Mnookin, *supra* note 14, at 1013.
132. Gross, *supra* note 106, at 1133; Mnookin, *supra* note 14, at 1013.

result, the hired experts will not necessarily have the most knowledge or expertise of the issues in dispute.[133] In fact, the opposite is often true. A party that chooses the best experts in the field is "stuck with whatever limitations of manner and background those people possess," and leading experts are unlikely to have the time or inclination to spend time learning "the techniques of effective presentation."[134] By contrast, those who make their living as expert witnesses, rather than by actually working in the field, have both the incentive and the ability to devote time "to perfecting their courtroom demeanor."[135]

Again, the problem with lay judges and jurors evaluating the testimony of expert witnesses is just as much a problem in patent litigation as other areas. Commentators have recognized that "an expert's credibility and other characteristics unrelated to the expert's technical analysis" are likely to have a greater impact than "the actual quality of the expert's technical analysis" because lay decision makers "are ill-equipped to evaluate technical matters" or resolve "contradicting technical evaluations . . . [that] often involve fine distinctions."[136] Indeed, much of the expert testimony in patent litigation is of the most problematic type: subjective testimony based just on experience and training, not any objective basis. Subjective questions abound, such as whether a PHOSITA would find a particular patent obvious in light of existing knowledge; whether the patent disclosure is sufficient to enable a PHOSITA to make and use the invention; or what meaning a PHOSITA would ascribe to a term as it is used in a particular patent. These are not questions that can be tested or objectively verified. Rather, the expert subjectively offers an opinion based on his or her knowledge, experience, and training in the field.

3. Litigation's Distortion of Science

A third related problem with expert witnesses arises from the fact that law and science are an imperfect fit.[137] The needs of litigation distort the way in which science is presented by expert witnesses. This problem manifests itself in several ways.

First, uncertainty is often the best scientific answer (e.g., it is likely or

133. Mnookin, *supra* note 14, at 1011.

134. Gross, *supra* note 106, at 1134.

135. *Id.*

136. Laura Hall, *Technical Experts in Patent Trials: A Psychological Perspective*, 39 AIPLA Q.J. 195, 197–98 (2011).

137. Robert A. Bohrer, *The Fundamental Difference Between Science and Law*, *in* EXPERT WITNESSING: EXPLAINING AND UNDERSTANDING SCIENCE 41, 41–49 (Carl Meyer ed., 1999).

we do not know).[138] By contrast,

> [c]onfidence and certainty are traits that lawyers seek when they choose experts—and traits they try to instill as they prepare them for trial. . . . Worse, in many cases substantive rules of law require expert witnesses to phrase their testimony in terms of a specified level of confidence.[139]

As a result, a core problem with expert testimony "is that experts claim as matters of fact or probability opinions that should be couched in more cautious terms, as possibilities or hypotheses."[140]

Second, science focuses on general questions, whereas law seeks particular, individualistic answers. For example, the province of science is to say that one in one thousand people taking a drug will have an adverse reaction, not to identify which person will have the adverse reaction.[141] By contrast, in law, one needs to know whether this specific person has been harmed by the drug.[142]

Third, and relatedly, there often will not be existing scientific research or knowledge that will meet the needs of the case, either because the case presents a new scientific question (e.g., does this substance cause cancer?) or because the case demands an answer specific to the facts of the case.[143] As a result, "scientific expertise is produced in response to litigation," and "science's normal processes of validation [(e.g., peer review)] can be bypassed or distorted."[144]

The distortions to science resulting from the imperfect fit with litigation are equally applicable in patent litigation. Because patent litigation requires answers about the specific patent at issue, there is unlikely to be significant existing expertise on the questions to be answered, like whether the patent is obvious or would enable someone to make and use the invention. Rather, scientific expertise must be created for the specific litigation. And patent law demands definite answers—the patent is either obvious or not obvious or enabled or not enabled—rather than accepting hypotheses or probabilities.

C. The PHOSITA and the Theory of the Second Best

When viewed through the lens of the well-recognized problems with expert witnesses, patent law's renewed emphasis on the PHOSITA is

138. Mnookin & Gross, *supra* note 122, at 186.
139. *Id.* at 189.
140. *Id.* at 143.
141. Bohrer, *supra* note 137, at 48–49.
142. *Id.*
143. SHEILA JASANOFF, SCIENCE AT THE BAR: LAW, SCIENCE, AND TECHNOLOGY IN AMERICA 50 (1995).
144. *Id.* at 51.

surprising. Greater reliance on the PHOSITA equates with greater reliance on expert witnesses, and expert witnesses are highly problematic in litigation. So why would courts and commentators advocate increasing the PHOSITA's role in patent litigation?

To some extent, the answer is that the patent community does not have the same concerns about expert witnesses as in other areas of law. Rather than the necessary evil that they are seen as generally, expert witnesses are sometimes described as essential protectors of the patent system, serving to prevent generalist judges and juries from bungling patent cases.[145] For example, the Federal Circuit has explained that expert witness are "[t]he foil to judicial hindsight" in evaluating the obviousness of a patent.[146]

Yet, even those patent commentators that recognize the problems introduced by expert witnesses still support greater reliance on the PHOSITA in patent litigation. For example, Professors Fromer and Lemley acknowledge that the use of an expert, or PHOSITA, perspective in patent litigation "presents difficult second-order issues" for lay decision makers because the need for expert witnesses presents "the usual concerns about the reliability of the evidence, a possible battle of the experts, and the ability of laypeople to process this evidence."[147] Though Professors Fromer and Lemley are generally supportive of the expert, or PHOSITA, perspective they suggest potential ways to mitigate the concerns related to expert witnesses.[148] Similarly, Professor Holbrook notes that when laypersons confront technical information and issues, there is a risk that they will over-rely on expert testimony.[149] But Professor Holbrook strongly criticizes the Federal Circuit's de-emphasis of the PHOSITA and encourages greater focus on the PHOSITA in patent litigation, though he suggests that using presumptions might address

145. *See* Burk & Lemley, *supra* note 1, at 1197 (suggesting, without critical analysis, that "[e]xpert witnesses can help" lay judges learn difficult science); Hall, *supra* note 136, at 196–97 ("Technical expert witnesses play an important role in educating jurors on the relevant technical matter so that the jurors may rightly decide the case."); R. Polk Wagner & Lee Petherbridge, *Did Phillips Change Anything? Empirical Analysis of the Federal Circuit's Claim Construction Jurisprudence*, *in* INTELLECTUAL PROPERTY AND THE COMMON LAW 123, 145 (Shyamkrishna Balganesh ed., 2013) (advocating an approach to claim construction where "the knowledge of technologists [i.e., experts] determines meaning" and leaves judges and lawyers to simply "implement and execute the interpretive procedure").

146. Outside the Box Innovations, LLC v. Travel Caddy, Inc., 695 F.3d 1285, 1297 (Fed. Cir. 2012).

147. Fromer & Lemley, *supra* note 7, at 1280–84, 1286–88.

148. *Id.*

149. Holbrook, *supra* note 6, at 815.

concerns with experts.[150]

This Article's hypothesis, loosely drawing on the economic theory of the second best, is that the increasing reliance on the PHOSITA in patent litigation is an example of incomplete first-best theorizing.[151] A first-best state of affairs is "the most desirable state the whole system could assume" under ideal conditions.[152] Commentators agree that a first-best patent system would fully incorporate and reflect the technical nature and audience of patents.[153] The ability to achieve a first-best state of affairs depends, however, on numerous variables—all of which must be in their individual first-best state in order for the system to achieve the first-best outcome.[154] Often, one or more variables will not be capable of reaching its first-best state, preventing achievement of the first-best outcome.[155] The patent system's ability to achieve its first-best state of accurately reflecting the technical nature and audience of patents is constrained by the nature of the decision makers—lay judges and juries who generally lack the necessary scientific background.[156]

But what should result if lay decision makers in patent litigation make it impossible to achieve the first-best state of perfect fidelity to patent law's technical nature and audience? The patent community's response is essentially to try to approach the first-best state of technical fidelity as closely as possible through increased use of the PHOSITA, despite the problems with expert witnesses that it creates. Indeed, the PHOSITA perspective has been justified as having "the practical effect of avoiding the requirement that judges and other arbiters of patentability be experts in a given field."[157] Essentially, if lay decision makers prevent perfect technical fidelity, then reliance on the PHOSITA moves the system as close as possible.

The theory of the second best casts doubt on this approach. If one

150. *Id.* at 815–25.

151. *Cf.* ADRIAN VERMEULE, JUDGING UNDER UNCERTAINTY: AN INSTITUTIONAL THEORY OF LEGAL INTERPRETATION 80–81 (2006) (describing pervasive first-best theorizing in statutory interpretation and need for second-best theories that account for institutional shortcomings).

152. Lawrence B. Solum, *Constitutional Possibilities*, 83 IND. L.J. 307, 311 (2008).

153. *See* Burk & Lemley, *supra* note 1, at 1196–97 (describing the "right" outcome as one that reflects the understanding of a scientist); Holbrook, *supra* note 6, at 807 (criticizing doctrines that ignore the technical nature of patents).

154. Solum, *supra* note 152, at 311.

155. *Id.*

156. *See* Burk & Lemley, *supra* note 1, at 1196 ("[J]udges are at a rather serious disadvantage in trying to put themselves in the shoes of an ordinarily skilled scientist.").

157. *Id.* at 1188; *see also* Holbrook, *supra* note 6, at 784 ("[T]he reliance on the PHOSITA is necessary given the nature of the patent document, which has both legal and technical aspects.").

variable necessary to achieve a first-best state of affairs is constrained, it might be necessary to change other variables in order to achieve a second-best state of affairs.[158] Keeping all of the other variables the same, despite the constrained variable, might produce a worse outcome than changing variables other than just the constrained variable. Put differently, and more specifically, "if an imperfect judge knows that he [or she] will fall short of the standard of perfection defined by the reigning first-best accounts of [the law], it is by no means clear that he [or she] should attempt to approximate or approach that standard as closely as possible."[159]

Patent law's experience with the PHOSITA perspective provides a strong practical example of this theoretical account. The constrained variable of lay decision makers in patent litigation makes it impossible to achieve the first-best state of perfect technical fidelity. The patent system attempts to approach this first-best state as closely as possible by using the PHOSITA mechanism. But use of the PHOSITA introduces the well-recognized problems of cost, bias, and inaccuracy associated with expert witnesses. Thus, attempting to come as close as possible to the first-best state of technical fidelity may be backfiring, producing a worse outcome than seeking a second-best outcome in light of the constraints imposed by lay decision makers in patent litigation.

III. OPTIMIZING PATENT LITIGATION

In the previous Parts, this Article argued that the trend toward greater reliance on the PHOSITA in patent litigation is problematic because it attempts to replicate as closely as possible the first-best outcome of technical fidelity—even though the ability to achieve this first-best state is constrained by the lay decision makers used in patent litigation. This Part turns to the consequence of this observation for the patent system. Part III explores two possibilities. First, perhaps the constraint that prevents achievement of the first-best state of technical fidelity, namely, lay decision makers, should be removed. But frequent proposals along these lines have gained little traction. If lay decision makers are here to stay, then the second option is to adjust patent law doctrines to achieve a second-best outcome that reflects the actual capabilities of lay decision makers.

158. Solum, *supra* note 152, at 311.

159. VERMEULE, *supra* note 151, at 81 (analyzing statutory interpretation).

A. Toward a First-Best Outcome?: Technical Decision Makers

If the ideal outcome is accurate resolution of the technical merits of patent cases, then perhaps steps should be taken to increase the chances of technical fidelity. And if lay decision makers are the primary constraint on technical fidelity, then maybe the solution is to replace lay decision makers with expert decision makers.

Proposals abound to increase the technical competency of decision makers in patent litigation. The most common proposals are to use court-appointed expert witnesses, technical advisors, or special masters.[160] But use of court-appointed experts, technical advisors, and masters has gained little traction in patent litigation.[161] Patent litigation's experience is consistent with that in litigation more generally. At least since Learned Hand suggested the idea in 1901,[162] most scholars who have confronted the problems introduced by expert witnesses have proposed the use of independent or court-appointed experts.[163] And yet "[j]udges simply do not do it, and attempts to change that fact have been uniformly ineffective."[164]

In part, this is because the use of court-appointed experts and technical adjuncts is inconsistent with the adversarial litigation system, "where the adversaries are in charge of every other aspect of the preparation and presentation of evidence."[165] Moreover, while court-appointed experts might solve the problem of adversarial or partisan bias, they do not address other problems presented by expert witnesses. Court-appointed experts bring their own preconceived notions or biases about the

160. *See, e.g.*, Josh Hartman & Rachel Krevans, *Counsel Courts Keep: Judicial Reliance on Special Masters, Court-Appointed Experts, and Technical Advisors in Patent Cases*, 14 SEDONA CONF. J. 61, 72–74 (2013) (discussing the risks and benefits of court-appointed witnesses, technical advisors, and masters); David Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 261 (2008) (noting several possible solutions to overcoming knowledge deficiencies in patent cases, including using special masters and other experts and a radical option of employing judges with technical expertise); Strom, *supra* note 2 (quoting Professor Dan Burk who stated: "[I]f judges are willing to use tools they otherwise don't use, like independent experts, the [patent] statutre can work a lot better").

161. Poplawski, *supra* note 102, at 183.

162. Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 56–58 (1901).

163. *See* Gross, *supra* note 106, at 1220 ("The logic of this procedure [of court-appointed experts] is so strong, in the abstract, that it invariably surfaces in every discussion of the issue.").

164. *Id.*; *see also* Mnookin & Gross, *supra* note 122, at 148 ("We systematically neglect well-considered plans for the use of unbiased (or at least, non-partisan) expert testimony as a supplement to potentially biased party-sponsored expert evidence.").

165. Gross, *supra* note 106, at 1221.

issues[166]—a problem that is especially great in areas where there is a legitimate range of scientific opinions on a matter.[167] Court-appointed experts also do not address the problems of the imperfect fit between science and litigation or the difficulty lay decision makers have in evaluating expert testimony. If anything, court-appointed experts exacerbate the latter problem because lay judges or juries may abdicate their responsibility to decide cases themselves and simply defer to the opinions of independent experts, technical advisors, or special masters.[168]

If court-appointed experts and adjuncts do not help lay decision makers achieve technical fidelity, then perhaps the only alternative is to abandon lay decision makers all together. Commentators have proposed shifting patent litigation to specialized courts with technically trained judges[169] or using specialized (or "blue-ribbon") juries with technically skilled jurors.[170] Again, patent litigation is not unique in this regard, as similar proposals have been made in other areas where science and law intersect.[171] And, again, these proposals have made little headway due to concerns about inconsistency with foundational aspects of the American jury system and practical difficulties related to identifying the appropriate level of expertise, finding decision makers that meet this level, and overburdening certain types of experts frequently needed in court.[172] The practical difficulties of such proposals are readily apparent in patent litigation, where what is needed is not a decision maker with *any* technical background, but instead a decision maker with the *specific* technical background of the technology at issue.[173]

166. Haack, *supra* note 127, at 66–67.

167. *See* Mnookin, *supra* note 14, at 604–05 (noting that legitimate differences of opinion are common in science).

168. *See* Gross, *supra* note 106, at 1221 (discussing this problem in the context of court-appointed experts); Mnookin, *supra* note 14, at 605 (discussing this problem in the context of neutral experts); *see also* Hartman & Krevans, *supra* note 160, at 72–74 (recognizing that the same problems exist with special masters and technical advisors as court-appointed experts).

169. *See, e.g.*, Fromer, *supra* note 30, at 1472–73 (discussing and critiquing such proposals); Schwartz, *supra* note 160, at 261 (emphasizing the discussion and critique of such proposals).

170. *See* Joshua L. Sohn, *Specialized Juries for Patent Cases: An Empirical Proposal*, 18 U. PA. J. BUS. L. 1175, 1177 (2016) (advocating for specialized juries with scientific training in patent cases).

171. *See, e.g.*, Scott Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L.J. 1535, 1681 (1998) ("The only solution . . . I see requires . . . a scientifically trained judge or juror or agency administrator, the same person who has legal authority must also have epistemic competence in relevant scientific disciplines."); Mnookin, *supra* note 14, at 606–11 (analyzing such proposals).

172. *See* Mnookin, *supra* note 14, at 606–11 (analyzing such proposals).

173. *See* Fromer, *supra* note 30, at 1479 ("Specialized patent trial courts hearing cases involving

An alternative to increasing the technical competency of courts in patent litigation is to shift more decision making in patent cases to the body that already possesses technical competency: the Patent Office. Unlike proposals to increase technical skill in the courts, efforts to shift more decision making to the comparative experts in the Patent Office have proven fruitful. The Leahy-Smith America Invents Act of 2011[174] introduced a variety of post-issuance procedures in the Patent Office that greatly increased the ability of litigants to challenge the validity of patents in the Patent Office instead of (or in addition to) courts.[175] These new procedures were motivated, in significant part, by the desire to raise the level of technical skill in patent decision making.[176] This Article generally supports this shift of more decision making to the Patent Office. If the first-best outcome is accuracy in terms of the technical merits of a patent case, then the comparative experts in the Patent Office are better suited to achieve that outcome than the generalist judges and juries in federal courts.

Yet, the shift of decision making to the Patent Office is incomplete, with the various post-issuance procedures limited, such as by time after the patent grant, grounds of invalidity, and sources of information considered.[177] Even this limited shift of decision making from courts to the Patent Office has proven controversial, leading to complaints about the number of patents invalidated and the constitutionality of the procedures.[178]

In sum, history suggests that efforts to enhance the technical capacity of decision makers in patent litigation are unlikely to succeed due to a combination of historical, practical, cultural, and efficacy reasons. To a limited extent, there has been a shift of some decision making to the comparative experts in the Patent Office. Yet, "unless we are prepared to make fundamental modifications to our adversarial system," lay

disparate industries and technologies would not be as helpful as their advocates suggest."); Lee, *supra* note 5, at 18 ("[A] judge trained in biotechnology might know very little about computer science."); Schwartz, *supra* note 160, at 261 n.175 ("Because patents are issued for all different technologies, judges could be assigned to disputes based upon technological experience.").

174. Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011).

175. Saurabh Vishnubhakat et al., *Strategic Decision Making in Dual PTAB and District Court Proceedings*, 31 BERKELEY TECH. L.J. 45, 48 (2016).

176. *Id.* at 54–56.

177. Sarah Tran, *Patent Powers*, 25 HARV. J.L. & TECH. 609, 631–39 (2012) (summarizing new procedures).

178. Brief for New York Intellectual Prop. Ass'n as Amici Curiae Supporting Neither Party, MCM Portfolio LLC v. Hewlett-Packard Co., 812 F.3d 1284 (Fed. Cir. 2015), *cert. denied*, 137 S. Ct. 292 (2016). (No. 15-1330).

decision makers will continue to resolve patent disputes.[179] The constraint lay decision makers impose on the patent system's ability to achieve the first-best outcome of accuracy to the technical merits of patent disputes is here to stay.

B. Toward a Second-Best Outcome: Tailoring Patent Law to Lay Decision Makers

Most proposals aimed at addressing the problems created by lay decision makers in patent litigation are like those discussed previously, seeking to bend litigation institutions to the needs of patent law by increasing the technical expertise in patent litigation.[180] But if those are unlikely to succeed for the reasons discussed, then an alternative is to bend patent law to the needs of the institutions and craft doctrines tailored to the capabilities of lay decision makers.[181]

Put another way, if the first-best outcome of technical fidelity is unachievable because of lay decision makers, then efforts to approach it as closely as possible by expanding the emphasis and role of the PHOSITA may be misguided. Rather, perhaps patent doctrines should be designed to achieve a second-best outcome that is actually possible in light of the capabilities of lay decision makers. To that end, Part III.B. offers some preliminary thoughts on the design of a second-best approach to patent law tailored to the capabilities of lay decision makers.

1. Legalistic Doctrines for Patent Litigation

Commentators criticize the Federal Circuit for adopting formalistic and legalistic doctrines that "transform[] the patent inappropriately into a purely legal document, when in fact that patent is a blend of the technical and the legal."[182] For example, many Federal Circuit decisions emphasize a legalistic approach to claim construction that focuses on parsing the language of the patent itself—a similar task to other forms of document interpretation that even uses similar canons—and de-emphasize a more technical evaluation of extrinsic evidence detailing the

179. *See* Mnookin, *supra* note 14, at 606–11 (discussing this issue in the context of litigation generally).

180. *See supra* Part III.A (discussing the use of technical decision makers in place of lay witnesses).

181. Lee, *supra* note 5, at 6 ("[N]o matter how elegantly policymakers craft patent law, if generalist judges lack the capacity to administer it, the patent system cannot fulfill its objectives."); *cf.* VERMEULE, *supra* note 151, at 36 (arguing in context of statutory interpretation that "[t]heorists should design their proposals in light of the capacities of the implementing institutions").

182. Holbrook, *supra* note 6, at 782–83.

state of the art and general understanding of technical people in the field.[183] Similarly, the Federal Circuit's pre-*KSR* approach to obviousness emphasized a legalistic parsing of written prior art documents to identify an express statement that would provide a motivation to combine references, rather than the more open-ended and technical evaluation adopted in *KSR*.[184]

The criticism is misplaced. Even if fidelity to the technical aspects of patents is a first-best outcome, it does not mean that we should design doctrines that require lay judges to approach this outcome as closely as possible. Critics of the Federal Circuit's approach acknowledge that its legalistic rules "are far more accessible to a layperson" and that "the focus on the more legal, intrinsic evidence would be favored by those trained in the law and not necessarily in the sciences."[185] Thus, these legalistic doctrines are well suited to the legally, but not technically, trained judges that must decide patent cases. As such, they might be a second-best outcome that reflects the constraints imposed on the patent system by lay decision makers in patent litigation. Asking lay decision makers to apply more technically intensive doctrines that more closely approximate the first-best outcome of technical fidelity—such as those relying heavily on the PHOSITA—might lead to worse outcomes because of the costs and inaccuracies introduced by expert witnesses.

Professor Peter Lee has made a similar argument that is generally in line with the discussion here. According to Professor Lee, the Federal Circuit's formalistic approach (which largely overlaps with its preference for legalistic doctrines) "decreas[es] the extent to which lay judges must engage technologically challenging subject matter," thereby "lower[ing] the cognitive burdens associated with lay adjudication of technological disputes."[186] This reduces information costs for lay judges, avoiding the need for them to use simplifying tools like analogies or excessive deference to expert authority that undermine the accuracy of their resolution of more technically-intensive inquiries.[187] The problems introduced by the expert witnesses that are necessitated by more technically focused doctrines, like those relying heavily on the

183. Wagner & Petherbridge, *supra* note 145, at 144–45 (criticizing the overly legalistic nature of claim construction).

184. Durie & Lemley, *supra* note 48, at 991 (stating that the Court in *KSR* sought "to make the obviousness determination less of a legal construct and to put more weight on the factual determination of what scientists would actually think and do about a particular invention").

185. Holbrook, *supra* note 6, at 782–83, 790.

186. Lee, *supra* note 5, at 25–29.

187. *Id.* at 20–25.

PHOSITA, offer further support for the use of a more legalistic approach to patent law in patent litigation.

On this view, the problem with the Federal Circuit's approach to patent law is not necessarily its legalistic or formalistic patent law doctrines. It might be that it chooses the wrong legalistic or formalistic doctrines, for example, by adopting consistently pro-patentee doctrines that have unduly expanded the scope of patent rights.[188] Prior work has suggested another problem: the Federal Circuit's legalistic rules apply not just to patent litigation, where they can be justified in light of the needs of lay decision makers, but also to patent acquisition in the Patent Office, where they make a lot less sense given the presence of technically skilled decision makers.[189] This suggests decoupling patent law, so that rules, standards, tests, and the like can be tailored for the different contexts and decision makers of patent litigation in the courts and patent acquisition in the Patent Office.[190] This decoupling could include the use of more legalistic tests better suited for lay decision makers in the courts and more technical tests better suited for technically, but not legally, trained decision makers in the Patent Office.[191]

2. Partially Eliminating the PHOSITA

The PHOSITA is pervasive in patent law, found in virtually all doctrines.[192] But is this warranted? As a formalist matter, the PHOSITA's perspective is only statutorily required in two areas of patent law: obviousness under 35 U.S.C. § 103 and enablement under 35 U.S.C. § 112(a).[193]

Functionally, the primary role of the PHOSITA is to fill "the gap

188. *Id.* at 44–46 (describing this view).

189. Reilly, *supra* note 25 (manuscript at 46–49).

190. *Id.*

191. *Id.*

192. Holbrook, *supra* note 6, at 781.

193. Commentators have suggested that the statute requires the PHOSITA perspective not just for enablement, but also for the closely related doctrine that the inventor provide a written description of its invention, also found in Section 112(a). *See* Burk & Lemley, *supra* note 1, at 1186 (explaining how PHOSITA's parallel language sets the measures for several related disclosure doctrines); *see also* Holbrook, *supra* note 6, at 792 (noting that the trend of elevating disclosure over the knowledge of PHOSITA comes from emphasizing the written description of an invention). This is inconsistent with the reading of the relevant statutory provision adopted by the en banc Federal Circuit, which attributed Section 112's reference to a "person skilled in the art" only to the enablement requirement. *See* Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1343–45 (Fed. Cir. 2010) (en banc) (determining that the language in Section 112 modifies only the written description requirement). The Federal Circuit also adopted the PHOSITA perspective for written description, apparently as a matter of common law. *Id.* at 1351.

between the skill of ordinary practitioners and the written record" of the patent and prior art.[194] For some doctrines, this gap-filling function is vitally important. For example, if a patentee had to provide every single detail to enable someone to make and use the invention, no matter how trivial or well-known, the patent document would quickly become unwieldy, undermining its public notice function.[195] Supplementing the patent document's disclosure with the PHOSITA's background knowledge avoids this problem. Similarly, permitting patentees to obtain a patent on anything that was not exactly present in the prior art—no matter how trivial the difference—would create a variety of problems, including unduly rewarding the first to patent for inventions that would been developed without the incentive of a patent. This would undermine incentives for follow-on innovation and increase costs due to a flood of applications on trivial inventions.[196] Permitting the explicit disclosure of the prior art to be supplemented by the PHOSITA's knowledge and abilities in determining whether an invention is obvious avoids these problems.

But the gap-filling purpose of the PHOSITA does not hold for all doctrines where it is used, or at least is not a strong enough rationale to justify the costs imposed by the PHOSITA's perspective. For example, prior work suggests that claim construction should be evaluated from the perspective of an "ordinary reader," not the PHOSITA.[197] The primary justification for using the PHOSITA's perspective in claim construction is to ensure that the construction reflects the technical audience of patent claims, not the judge's own lay understanding.[198] But it is doubtful the PHOSITA's perspective is necessary to achieve this purpose. The patent document itself provides substantial information about the technical context, and even a lay decision maker will use the provided technical context in construing the claim,[199] in the same way that an intelligent, but not business-savvy, reader of the *Wall Street Journal* will use the context provided to understand a complicated financial concept. The result is likely to be a construction that approaches the technical meaning in the

194. Eisenberg, *supra* note 49, at 897–98.

195. ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 274 (6th ed. 2013).

196. *Id.* at 608–10.

197. *See generally* Greg Reilly, *Judicial Capacities and Patent Claim Construction: An Ordinary Reader Standard*, 20 MICH. TELECOMM. & TECH. L. REV. 243 (2014) (depicting a full analysis of the ordinary-reader standard).

198. *Id.* at 288.

199. *Id.* at 288–89.

field, at least closely enough that the additional benefits the PHOSITA's perspective offers in terms of technical fidelity are outweighed by the costs.

Similarly, the PHOSITA's perspective is used in determining anticipation (or novelty) and literal infringement,[200] even though no gap exists to be filled in those doctrines. Both doctrines ask whether the exact same invention, with all its elements, is present, either in the prior art (anticipation) or the accused product (literal infringement).[201] It is not clear why the PHOSITA's perspective is necessary, at least in light of its costs. Certainly, the judge must understand the disclosure of the prior art (anticipation) or operation of the accused product (infringement), and may require expert testimony to do so. But this will be limited to the question of what the prior art actually says or how the accused product actually operates, rather than more open-ended and subjective questions about what the PHOSITA would implicitly know, understand, or be able to do.

Thus, in areas of patent law where no gap exists between the question at issue and the written record—like claim construction, literal infringement, and anticipation—the use of the PHOSITA's perspective introduces more problems than it is probably worth.

3. Reigning in the PHOSITA

The choice is *not* between completely eliminating the PHOSITA in favor of wholly legalistic doctrines or making patent law doctrines completely dependent on the PHOSITA's perspective. Rather, the PHOSITA's perspective can be calibrated to optimize the increased fidelity to the technical merits it provides while minimizing the problems of expert testimony that it introduces. Design choices about *how* to use the PHOSITA in patent litigation have a substantial impact on the extent of problems that it creates.

Efforts by the Supreme Court and commentators to increase reliance on the PHOSITA in patent litigation range in the scope of the role, the

200. Holbrook, *supra* note 6, at 781. Infringement can also be found if the accused product is the equivalent of the claimed invention, even if not exactly the same. Infringement by the doctrine of equivalents thus involves a gap in the written record for which the PHOSITA's perspective may be appropriate.

201. MERGES & DUFFY, *supra* note 195, at 344–45; American Intellectual Property Law Association, Model Patent Jury Instructions, Nos. 3.2, 6.0 (2015), http://www.aipla.org/learningcenter/library/books/other-pubs/Documents/AIPLA%20Model%20Patent%20Jury%20Instructions%202015%20Final.docx (noting the instructions for literal infringement).

extent of the tasks, and the amount of "power" given to the PHOSITA. At one extreme, the Supreme Court in *Nautilus* held that "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."[202] Because the Supreme Court provided virtually no guidance or constraint as to how to determine whether a PHOSITA would find a claim reasonably certain,[203] this leaves the doctrine extremely dependent on the views of the PHOSITA, and therefore expert witnesses offering their own opinions based on their subjective knowledge and experience in the field.

KSR represents a less extreme, but still broad, delegation of "power" to the PHOSITA.[204] *KSR* undoubtedly indicated that courts should "pay more attention than they have in the last quarter-century to who the PHOSITA is and what he or she thinks" and that courts can rely more broadly on the PHOSITA's ingenuity and problem-solving ability.[205] But *KSR* made "the background knowledge possessed by a person having ordinary skill in the art" just one of the considerations in its multi-factor approach along with other factors such as the "interrelated teachings of multiple patents; [and] the effects of demands known to the design community or present in the marketplace."[206] The need to consider these other factors imposes some constraint on the PHOSITA's perspective that makes the PHOSITA less "powerful" under *KSR* than under *Nautilus*.

Teva provides an even more constrained role for the PHOSITA.[207] The Court indicated it was appropriate for the "district court [to] resolve[] a dispute between experts and make[] a factual finding that, in general, a certain term of art had a particular meaning to a person of ordinary skill in the art at the time of the invention."[208] If the Supreme Court had stopped there, the scope of the PHOSITA's role would look similarly broad to *Nautilus*. Instead, the Court emphasized that "the district court must then conduct a legal analysis: whether a skilled artisan would

202. Nautilus Inc. v. Biosig Instruments Inc., 134 S. Ct. 2120, 2123 (2014).

203. Greg Reilly, *Completing the Picture of Uncertain Patent Scope*, 91 WASH. U. L. REV. 1353, 1354 (2014).

204. KSR Int'l. Co. v. Teleflex Inc., 127 S. Ct. 1727, 1742 (2007).

205. Durie & Lemley, *supra* note 48, at 1002.

206. *Teleflex*, 127 S. Ct. at 1740–41; Durie & Lemley, *supra* note 48, at 999 ("*KSR* is a bit of a Rorschach test, offering language that can be twisted to support virtually any view of obviousness law.").

207. *See* Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

208. *Id.*

ascribe that same meaning to that term in the context of the specific patent claim under review."[209] In this way, the context of the patent limits and constrains the role of the PHOSITA—the Court's claim construction must be consistent not just with the PHOSITA's understanding, but also with the disclosure of the written patent document. At best, the PHOSITA's own understanding can set a baseline, or presumptive meaning, that then can be rebutted by the information from the patent document itself.[210]

Despite being one of the strongest proponents of increased use of the PHOSITA in patent litigation, Professor Holbrook's vision for the PHOSITA's role is even more limited than any of the Supreme Court cases.[211] Holbrook's proposal is to use presumptions that "prefer[] reliance on the patent document and public record over extrinsic, technological evidence" but that "can be rebutted by persuasive technology-based evidence."[212] A legalistic inquiry, such as parsing the patent document itself, would set the default position, and consideration of extrinsic evidence of the PHOSITA's knowledge, skills, or perspective would be limited to overcoming the presumption set by the legalistic inquiry.[213] This narrows the role of the PHOSITA and limits the PHOSITA's impact, thereby minimizing the problems created by expert witnesses. Indeed, Holbrook notes that one benefit of his approach is that it could "act as a counterbalance to overreliance on expert testimony, one risk when laypersons encounter technical information."[214]

The problems with expert witnesses introduced by reliance on the PHOSITA's perspective suggest that patent law doctrines relying on the PHOSITA should be designed more in line with the Holbrook or *Teva* end of the spectrum than with the *Nautilus* or *KSR* end. Reducing the role of the PHOSITA and providing checks or constraints on the PHOSITA's perspective minimize the problems created when lay decision makers rely on expert witnesses to obtain information about the PHOSITA's perspective.

209. *Id.*

210. *See* Rantanen, *supra* note 59, at 392 (reading *Teva* as adopting a factual approach to "starting meaning . . . . where the judge begins by making a factual determination about the meaning of a claim term to a person of skill in the art" and only then looks to intrinsic evidence in reaching a final meaning).

211. Holbrook, *supra* note 6, at 783.

212. *Id.*

213. *Id.* at 819–25.

214. *Id.* at 815.

4. Increasing the Objectivity of Patent Law

Among the most troublesome types of expert evidence is subjective opinion based on knowledge, training, and experience that lacks an objective foundation—a common type of expert testimony in patent cases.[215] Ironically, the PHOSITA perspective is justified as "plac[ing] the standard for patentability on a legally objective, rather than subjective, footing" because it does not depend on the actual abilities of the inventor or any other person.[216] But the PHOSITA perspective enters patent litigation based on the testimony of expert witnesses, who are often testifying based primarily, or exclusively, on their own subjective views developed based on their own knowledge, experience, and training.[217]

An obvious design choice to minimize the problems the PHOSITA perspective creates for lay decision makers is to increase the objectivity of patent law doctrines, making them more dependent on an objectively verifiable foundation and less dependent on the background knowledge and experience of the PHOSITA (and therefore, expert witnesses). Increasing the objective foundation of patent law has two principle effects for the problems addressed in this Article. First, it helps mitigate adversarial bias by constraining the opinions that can be offered. Expert witnesses cannot provide open-ended opinions that simply cite their own training and experience and essentially tell the lay decision maker to "trust me." Rather, they must reconcile their opinions with the objective foundation, limiting the range of opinions that can be offered.

Second, it helps mitigate the problems lay judges have evaluating expert testimony. Judges do not need to have their own experience in the technical field, or develop their own understanding of the knowledge in the field, to evaluate the expert testimony or resolve conflicts between experts. Nor are they left to decide based on secondary criteria like demeanor and testifying ability. Instead, judges can check the expert testimony against the objective foundation. By no means does this resolve the problems of lay decision makers evaluating expert evidence. The judge may have an imperfect understanding of the objective foundation or make an incorrect determination about how the expert evidence compares to the objective foundation. The claim is only relative. Compared to subjective expert testimony based on knowledge,

215. *See supra* Part II.B.2 (explaining how expert testimony that applies subjective criteria when objective criteria is lacking creates problems for laypeople attempting to understand particular subject matters).

216. Burk & Lemley, *supra* note 1, at 1188.

217. *See supra* Part II.B.2 (describing how experts apply subjective criteria based on their own training and experiences).

training, and experience—which completely lacks any means for the judge to evaluate other than secondary criteria—an objective foundation at least provides some means for evaluation, even if imperfect.

The obviousness doctrine pre- and post-*KSR* offers a good example. Commentators have criticized the pre-*KSR* Federal Circuit for treating the PHOSITA "as a bit of a 'dullard,' aware of the art but devoid of creativity or inventive skills."[218] Courts only looked to PHOSITA to determine how the PHOSITA would read the prior art references, instead of what the PHOSITA would know or do.[219] This approach was criticized because it prevented reliance on "the judgment, intuition and tacit knowledge of ordinary practitioners in the field that cannot be documented in the written record."[220]

To the contrary, this Article suggests that this result was exactly the benefit of the Federal Circuit's approach. To determine in litigation the "judgment, intuition and tacit knowledge of ordinary practitioners in the field *that cannot be documented in the written record*,"[221] necessarily requires subjective expert testimony based just on knowledge, experience, and training—among the most problematic forms of expert testimony. By contrast, limiting the PHOSITA's perspective to determining what the prior art references disclosed and suggested provided an objective foundation for the expert testimony—the texts of the prior art references themselves. Even if lay judges did not perfectly understand the prior art references, they at least had something to which to compare the experts' testimony. And there was some restraint on what an expert could say.

By focusing more on the PHOSITA's background knowledge, ingenuity, and capabilities, *KSR* made obviousness a less objective doctrine that depended more on the subjective testimony of expert witnesses.[222] Over a century of writing on expert witnesses suggests this was a bad choice.[223]

CONCLUSION

The trend toward greater reliance on the PHOSITA in patent litigation is superficially appealing. Patent litigation is an inherently technical

218. Durie & Lemley, *supra* note 48, at 1001.
219. Eisenberg, *supra* note 49, at 889.
220. *Id.* at 888.
221. *Id.*
222. Durie & Lemley, *supra* note 48, at 999–1004.
223. *See supra* Part II (detailing the problems of reliance on expert testimony in litigating patent cases).

subject, and fidelity or accuracy to the technical aspects seems like an important objective. Yet, technical fidelity is an unachievable first-best outcome in light of the lay decision makers in patent litigation. Trying to approximate this first-best outcome as closely as possible through the use of the PHOSITA introduces a host of well-recognized problems for lay decision makers related to expert witnesses. A second-best approach that tailors patent doctrines to the needs of lay decision makers is preferable in practice, even if not ideal in theory.