

OBVIOUS TO WHOM? EVALUATING INVENTIONS FROM THE PERSPECTIVE OF PHOSITA

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I. INTRODUCTION

The “nonobviousness” standard determines how much an invention must differ from the prior art in order to qualify for a patent.¹ In theory, this standard prevents issuance of patents on inventions that, although new, are so close to the prior art that they are likely to be forthcoming even without patent incentives.² Section 103 of the Patent Act articulates the basic standard as follows:

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1. Many legal scholars have written about the nonobviousness standard. See Martin J. Adelman, *The New World of Patents Created by the Court of Appeals for the Federal Circuit*, 20 U. MICH. J.L. REFORM 979 (1987); John H. Barton, *Non-Obviousness*, 43 IDEA 475 (2003); Edmund W. Kitch, *Graham v. John Deere Co.: New Standards for Patents*, 1966 SUP. CT. REV. 293; Glynn S. Lunney, Jr., *E-Obviousness*, 7 MICH. TELECOMM. & TECH. L. REV. 363 (2000-01); Robert P. Merges, *Commercial Success and Patent Standards: Perspectives on Innovation*, 76 CALIF. L. REV. 805 (1988); Robert P. Merges, *Uncertainty and the Standard of Patentability*, 7 HIGH TECH. L.J. 1 (1993); Cecil D. Quillen, Jr., *Proposal for the Simplification and Reform of the United States Patent System*, 21 AIPLA Q.J. 189 (1993).

2. *Graham v. John Deere Co.*, 383 U.S. 1, 11 (1965) (“The inherent problem was to develop some means of weeding out those inventions which would not be disclosed or devised but for the inducement of a patent.”); see also Kitch, *supra* note 1, at 301 (“The non-obviousness test makes an effort, necessarily an awkward one, to sort out those innovations that would not be developed absent a patent system.”). Lunney writes:

Ideally, under this view, a patent should be given for an invention only if the invention would not have been developed but for the patent. If the claimed invention would have been developed, commercialized, and

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.³

Read for plain meaning, this language seems to call for evaluations of nonobviousness from the perspective of ordinary practitioners who are contemporaries of the inventor in the relevant technological community. It specifies a point in time as of which the obviousness of the invention should be evaluated (“at the time the invention was made”) and designates the person whose judgment of obviousness should control (“to a person having ordinary skill in the art to which said subject matter pertains” or PHOSITA), as well as directing attention to “the differences between the subject matter sought to be patented and the prior art.”⁴

If the point of the nonobviousness requirement is to distinguish patent-worthy inventions from routine advances that do not require the incentive of a patent, this is a sensible frame of reference. An invention that seems obvious at the time it was made to ordinary practitioners in the technological community is likely to occur promptly to others with or without the inventor’s efforts, and the legislative choice to exclude such slight advances from patent protection seems to be a reasonable rule of thumb.⁵ Otherwise, consumers would endure unnecessary restrictions on competition in new technologies and competitors would feel compelled to waste resources racing to make and patent modest incremental advances for fear of being foreclosed by the patents of others from doing what comes easily

disclosed even without a patent, then granting or enforcing a patent would make little sense.

Lunney, *supra* note 1, at 365-66.

3. 35 U.S.C. § 103 (2000).

4. *Id.* § 103.

5. One criticism of this technological approach to patentability is that it ignores research and development costs, which might deter investment in making even technologically obvious inventions. *Cf.* Barton, *supra* note 1, at 496 (proposing adjusting the standard for nonobviousness “to grant a patent only if the invention is more substantial than that regularly made by a person of average skill in the art being funded and supported in a way that is typical in the relevant industry”).

to their own scientists and engineers.⁶ But the implementation of such a standard poses certain administrative challenges.

There are two main difficulties. One difficulty, much remarked by the Court of Appeals for the Federal Circuit, concerns the time frame for making the statutory determination. An invention that was in fact nonobvious at the time it was made might nonetheless appear obvious by the time it is evaluated for patentability some years later, especially to those who have read the inventor's disclosure.⁷ This concern about the corruption of judgments of nonobviousness by improper "hindsight" is a strong theme in Federal Circuit opinions.⁸ Another difficulty that has received far less attention is how to gain access to the perspective of ordinary practitioners in the field of the invention. An invention that seems obvious to a person having ordinary skill in the field might nonetheless seem patentworthy to a person who lacks such skill, even after reading the prior art record.

These two problems in the hypothetical frame of reference for making determinations of patentability—the problem of timing and the problem of skill level—are often conflated in judicial opinions. For example, in rejecting the contention that the trial court committed error by failing to make specific findings on the level of skill in the art, the Federal Circuit observed in *Kloster Speedsteel AB v. Crucible, Inc.*:

The primary value in the requirement that level of skill be found lies in its tendency to focus the mind of the decisionmaker away from what would *presently* be obvious to that decisionmaker and toward what would, *when the invention was made*, have been

6. As explained by one experienced patent professional: "At the end of the day everyone has more patents and no one has gained an advantage. All have found it necessary to incur higher costs." Quillen, *supra* note 1, at 195.

7. See generally Jeffrey J. Rachlinski, *A Positive Psychological Theory of Judging in Hindsight*, 65 U. CHI. L. REV. 571 (1998) (reviewing literature from cognitive psychology that shows tendency of people to exaggerate, with the benefit of hindsight, what could have been anticipated in foresight, and considering the implications of this "hindsight bias" in specific legal contexts).

8. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000) ("A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field."); *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) ("Measuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention . . .").

obvious, as the statute requires, “to one of ordinary skill in the art.”⁹

In this understanding, the statutory admonition to consider nonobviousness from the perspective of PHOSITA provides an additional safeguard against hindsight and works in tandem with the admonition to evaluate nonobviousness at the time the invention was made. But the problem of making determinations of nonobviousness from the perspective of a skilled practitioner is distinct from the problem of hindsight, and presents a very different risk. The risk posed by evaluating obviousness at a later date rather than “at the time the invention was made” is that the bar will be set too high. The risk posed by assigning the evaluation to a decision-maker who does not have ordinary skill in the art is that the bar will be set too low.

While the Federal Circuit has actively scrutinized obviousness determinations to detect and correct any “hindsight” bias, it has all but ignored the statutory directive that judgments of nonobviousness be made from the perspective of PHOSITA. Today, PHOSITA sits on the sidelines of obviousness analysis. Courts consult PHOSITA on the scope, content and meaning of prior art references but not on the ultimate question of whether the invention would have been obvious at the time it was made in light of the prior art. The resulting analysis excludes from consideration the judgment, intuition and tacit knowledge of ordinary practitioners in the field that cannot be documented in the written record. The written record understates the technological know-how that active practitioners bring to bear upon a problem, particularly in fields of industrial technology that offer few incentives to publish.

The technological skill of patent examiners may provide a proxy for the tacit knowledge of PHOSITA, but examiners are at best former practitioners whose practical technological skills inevitably decline with time. Moreover, the Federal Circuit actively discourages examiners from relying on their own technological skill in evaluating inventions, reprimanding them for failing to document the basis for decisions that explicitly rest upon their own common sense.¹⁰

9. 793 F.2d 1565, 1574 (Fed. Cir. 1986) (emphasis added) (citations omitted); *see also* Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 1324 (Fed. Cir. 1999) (“[T]he level of skill in the art is a prism or lens through which a judge or jury views the prior art and the claimed invention. This reference point prevents these deciders from using their own insight or, worse yet, hindsight, to gauge obviousness.”).

10. *In re Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002) (“‘Common knowledge and common sense,’ even if assumed to derive from the agency’s expertise, do not substitute for authority when the law requires authority.”) (citation omitted); *In re Zurko*, 258 F.3d

In this Article, I consider the possibility of giving the USPTO input from currently active technological practitioners in evaluating the obviousness of claimed inventions. Such input could potentially serve three useful functions. First, it could improve the accuracy of USPTO decision-making by providing access to the perspective of actual practitioners as to the obviousness of inventions from the perspective of the hypothetical PHOSITA. Second, it could help the USPTO document the evidentiary basis for rejections that rest in part upon tacit knowledge within technological communities. Third, it could provide a quality control mechanism that would improve the credibility of USPTO decisions as to what is obvious. This mechanism should provide timely advice in a cost-effective manner while minimizing risks of bias and conflict of interest.

II. THE DIMINISHED ROLE OF PHOSITA IN JUDICIAL DECISIONS

Judicial decisions have assigned a far lesser role to PHOSITA in evaluating nonobviousness than one might expect from parsing the language of the statute. Courts have marginalized the role of PHOSITA by presuming that PHOSITA is incapable of innovation and by treating determinations of nonobviousness as conclusions of law.¹¹ They have further marginalized PHOSITA's role by enhancing the relevance of nontechnological evidence of nonobviousness,¹² by requiring evidence of "suggestion" to combine references from the prior art to establish obviousness,¹³ and by reversing rejections that rely on "common sense" rather than explicit documentation in prior art. Rather than turning to PHOSITA for a skilled appraisal of what would have been obvious at the time the invention was made, courts simply invoke PHOSITA's understanding to determine what the prior art references disclose and suggest, making the ultimate determination of nonobviousness themselves. This approach has left

1379, 1386 (Fed. Cir. 2001) ("The Board cannot simply reach conclusions based on its own understanding or experience—or on its assessment of what would be basic knowledge or common sense."); *In re Rouffet*, 149 F.3d 1350, 1358 (Fed. Cir. 1998) (rejecting Board's conclusion because it failed to "explain the specific understanding or principle").

11. *Aktiebolaget Karlstads Mekaniska Werkstad v. U.S. Int'l Trade Comm'n*, 705 F.2d 1565, 1575 (Fed. Cir. 1983) ("Obviousness is a legal conclusion based on factual determinations and not a factual determination itself.") (citation omitted).

12. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 667 (Fed. Cir. 2000) ("Evidence of secondary considerations may often be the most probative and cogent evidence in the record.") (quoting *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)).

13. *Beckson Marine, Inc. v. NFM, Inc.*, 292 F.3d 718, 728 (Fed. Cir. 2002); *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349 (Fed. Cir. 2000).

the courts with considerable room for active judicial review. The Federal Circuit has deployed judicial review in ways that make it harder to establish nonobviousness, diminish the role of nonobviousness in limiting what may be patented, and reduce the threat of patent invalidity. In the process, it has arguably disregarded the statutory language and permitted the issuance of patents on routine advances within easy reach of technological practitioners of ordinary skill.

In *Graham v. John Deere Co.*, the U.S. Supreme Court included the level of ordinary skill in the art in its enumeration of “several basic factual inquiries” to be made in the course of applying the statutory standard:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.¹⁴

Yet in its own application of the standard, the Court simply compared the prior art to the claimed inventions and offered its own assessment of obviousness with no further reference to the skill level of PHOSITA.¹⁵ Subsequent lower court decisions, while noting that *Graham* calls for explicit factual findings as to skill level, have treated the failure to make such findings as harmless error.¹⁶

Although the Federal Circuit continues to recite the level of ordinary skill as one of the necessary findings to be made in applying the nonobviousness standard, and even acknowledges explicit findings as to skill level in the USPTO and the District Courts,¹⁷ these findings seem to do little work in guiding its own review of the ultimate conclusion as to patentability. Instead, the Federal Circuit has generally focused on the prior art references themselves, consulting the perspective of PHOSITA only to de-

14. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1965).

15. Nor did the Court appear to rely on any findings concerning the level of ordinary skill in the art in its evaluation of the obviousness of the inventions at issue in its subsequent decisions in *Anderson's Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969), *Dann v. Johnston*, 425 U.S. 219 (1976), and *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976). See 2 DONALD S. CHISUM, CHISUM ON PATENTS § 5.03[4][a] (2004).

16. *E.g.*, *Okajima v. Bourdeau*, 261 F.3d 1350, 1354, 1356 (Fed. Cir. 2001) (noting factual inquiries described by *Graham* but finding “no legal error in the absence of specific findings as to the level of ordinary skill”); *Contico Int'l, Inc. v. Rubbermaid Commercial Prod., Inc.*, 665 F.2d 820, 824 n.9 (8th Cir. 1981); *Whitley v. Road Corp.*, 624 F.2d 698 (5th Cir. 1980).

17. *E.g.*, *Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1125 (Fed. Cir. 2000) (agreeing with district court's finding on education and experience level of PHOSITA).

termine what those references would reveal and suggest to a trained reader rather than to illuminate whether the invention would have seemed obvious to such a person.¹⁸

One reason for this diminished role for PHOSITA is a judicial presumption, with little if any support in the statutory language, that PHOSITA is an uncreative plodder, incapable of making inventions of his own. This presumption was frankly stated by the late Judge Rich in *Standard Oil Co. v. American Cyanamid Co.*:

The statutory emphasis is on a person of *ordinary* skill, and one should not go about determining obviousness under § 103 by inquiring into what *patentees* (*i.e.*, inventors) would have known or would likely have done, faced with the revelations of references. A person of ordinary skill in the art is also presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, and often expensive, systematic research or by extraordinary insights, it makes no difference which.¹⁹

This reading of the statute, which implies that patentees necessarily possess more than ordinary skill, inverts the relationship between the skill of PHOSITA and the standard of nonobviousness from the reading set forth in the introduction to this article. To Judge Rich, the skill of PHOSITA

18. *E.g.*, *In re Rouffet*, 149 F.3d 1350, 1359 (Fed. Cir. 1998) (stating that the USPTO Board did not err in relying on “lofty skill level” in the art to find that references would be understood to disclose all of the elements of the claimed invention, but reversibly erred in relying upon the high level of skill in the art to provide the necessary motivation to combine the references).

19. 774 F.2d 448, 454 (Fed. Cir. 1985). Judge Rich sometimes invoked his past role as a drafter of the statutory language in support of his own interpretations of the language of the Patent Act. *E.g.*, *Paulik v. Rizkalla*, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (Rich, J., concurring). Judge Rich stated in *Paulik*:

I write in order to express some additional thoughts respecting 35 U.S.C. § 102(g) as a member of the group which drafted that section. . . . In my view, considering what I know to have been the intent of [§ 102(g) of the Patent Act], it has been thoroughly misapplied by the board and the dissent here . . . by applying to § 102(g) a kind of stultifying literalism . . . misconstruing a section which was intended to be merely a codification of preexisting case law precedents

Id. (Rich, J., concurring). See generally Giles S. Rich, *Congressional Intent—Or, Who Wrote the Patent Act of 1952?*, in SOUTHWESTERN LEGAL FOUNDATION, PATENT PROCUREMENT AND EXPLOITATION: PROTECTING INTELLECTUAL RIGHTS 61, 78 (1963) (quoting a member of the patent subcommittee that held hearings on the Patent Act for the proposition that Judge Rich and the other drafters of the statute “far more than any member of the House or Senate, knew and understood what was intended by the language used”).

does not establish a floor for patentable inventions; rather, it is the legal standard for patentability that sets a ceiling for the skill level of PHOSITA. If practitioners in a particular field tend to be innovative (or, for that matter, to get patents), one must, apparently, consult the perspective of practitioners who have *less* than ordinary skill (or at least less than average skill) in order to maintain Judge Rich's presumption that PHOSITA "is not one who undertakes to innovate." This interpretation is in considerable tension with the statutory language. At best, it is circular, defining nonobviousness (and therefore patentability) by reference to the skill level of PHOSITA, and then defining PHOSITA's skill level by reference to capacity to make patentable (that is, nonobvious) inventions. At worst, it sets the stage for a downward spiral in which the standard of patentability falls as courts exclude patentees from consideration in assessing the skill level of PHOSITA, making it easier to obtain patents, and leading inexorably to a further lowering of judicial expectations for PHOSITA as yet more practitioners become patentees.

Apart from projecting low expectations onto PHOSITA, the Federal Circuit has made a number of other moves that curtail the relevance of PHOSITA to nonobviousness determinations. Soon after its formation, the Federal Circuit followed the Court of Customs and Patent Appeals in holding that the ultimate determination of obviousness is a legal conclusion subject to plenary review on appeal, rather than a factual determination subject to a more deferential standard of review.²⁰ The Supreme Court opinion in *Graham* was ambiguous on this point,²¹ although earlier decisions of the Court had generally treated the presence or absence of pat-

20. *Aktiebolaget Karlstads Mekaniska Werkstad v. U.S. Int'l Trade Comm'n*, 705 F.2d 1565, 1575 (1983).

21. The Supreme Court stated:

While the ultimate question of patent validity is one of law . . . the § 103 condition, which is but one of three conditions, each of which must be satisfied, lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

Graham v. John Deere Co., 383 U.S. 1, 17-18 (1965). The opinion goes on to draw an analogy to determinations of negligence, which the courts have sensibly treated as mixed determinations of law and fact.

entable invention as a question of fact, as had some circuit court decisions prior to the formation of the Federal Circuit.²²

Treating judgments of obviousness as unalloyed legal conclusions emphasizes the legal nature of the statutory standard itself, while ignoring the factual nature of the task of applying that standard to specific cases. Inasmuch as PHOSITA has no expertise in deciding legal questions, this approach obscures the relevance of PHOSITA's views about what would have been obvious at the time the invention was made, notwithstanding the apparent centrality of those views under the statutory language. It also leaves considerable room for active judicial review of the ultimate conclusion, irrespective of any findings of fact concerning skill level.

The Federal Circuit has further limited the significance of PHOSITA's views by attaching heightened importance to nontechnological evidence when evaluating obviousness.²³ Although the statutory language defines nonobviousness in purely technological terms, the Supreme Court recognized in *Graham* that “[s]uch secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.”²⁴ The Federal Circuit has elevated the status of such nontechnological evidence from the explicitly “secondary” role posited by the Supreme Court to a position of equal dignity with the primary inquiries—scope and content of the prior art, differences between the claimed invention and the prior art, and level of skill in the art—specified in the statute itself.²⁵ Indeed, the Federal Circuit has substituted the laudatory term “objective evidence” for the more equivocal

22. For a review of early Supreme Court cases on this question, see 2 CHISUM, *supra* note 15, § 5.04[3][a]. See also *Moore v. Shultz*, 491 F.2d 294, 300 (10th Cir. 1974) (“[N]onobviousness is itself a factual question.”) (citation omitted); *Koppers Co. v. Foster Grant*, 396 F.2d 370, 372 (1st Cir. 1968) (“In this situation, although, within limits, a question of law, the determination whether a discovery of a new combination is or is not obvious must be a question of fact.”).

23. Many commentators have remarked upon the significance of this change, including Adelman, *supra* note 1, at 989; Lunney, *supra* note 1, at 375, and Quillen, *supra* note 1, at 193.

24. *Graham*, 383 U.S. at 17-18.

25. E.g., *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 662-63 (Fed. Cir. 2000) (listing *Graham* factors, including secondary considerations such as commercial success and long-felt but unsolved need); *Apple Computer, Inc. v. Articulate Sys., Inc.*, 234 F.3d 14, 26 (Fed. Cir. 2000) (same); *Yamanouchi Pharm. Co., Ltd. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339 (Fed. Cir. 2000) (same); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983) (“Indeed, evidence of secondary considerations may often be the most probative and cogent evidence in the record.”).

“secondary evidence” in its own usage,²⁶ suggesting that reception of the invention by consumers is a more reliable indicator of its obviousness or nonobviousness than a technological evaluation from the perspective of PHOSITA.

Moreover, the Federal Circuit has downgraded PHOSITA from the role of skilled evaluator of obviousness that the statute seems to contemplate to the more limited role of skilled reader of prior art. Even within this diminished role, the Federal Circuit has shown little confidence in PHOSITA’s ability to use what he reads. Although earlier decisions pictured PHOSITA as possessing active awareness of all of the prior art and fully capable of considering references collectively,²⁷ the Federal Circuit has rejected this approach in favor of a more restrictive “suggestion” test for determining when references may be combined to establish obviousness.²⁸ Under this test, an invention consisting of multiple elements, each of which is disclosed in a different prior art reference, is nonetheless presumed to be nonobvious absent a showing through “objective evidence of record” of “some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant.”²⁹ This approach extends Judge Rich’s presumption that PHOSITA is a conventional thinker who is not inclined to innovate by further presuming that PHOSITA lacks the capacity to synthesize the teachings of others on his own. It is difficult to reconcile this approach with the Supreme Court’s admonition in *Graham* that the skill level of PHOSITA is a factual question that must be resolved before determining whether an invention is obvious.³⁰ In some fields, presumably, such a factual inquiry might reveal that ordinary practitioners have the skill to seek and combine elements on their own initiative without needing to be prompted by suggestion.³¹

26. *E.g.*, *Beckson Marine, Inc. v. NFM, Inc.*, 292 F.3d 718, 726 (Fed. Cir. 2002); *Yamanouchi*, 231 F.3d at 1343; *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

27. *E.g.*, *In re Winslow*, 365 F.2d 1017, 1020 (C.C.P.A. 1966) (“We think the proper way to apply the 103 obviousness test to a case like this is to first picture the inventor as working in his shop with the prior art references—which he is presumed to know—hanging on the walls around him.”).

28. *E.g.*, *In re Huston*, 308 F.3d 1267 (Fed. Cir. 2002) (requiring that prior art provide motivation, suggestion or teaching which would lead an individual to combine the relevant teachings of the references); *In re Thrift*, 298 F.3d 1357 (Fed. Cir. 2002) (same); *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002) (same).

29. *In re Rouffet*, 149 F.3d 1350, 1355-56 (Fed. Cir. 1998).

30. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1965).

31. Further complexities arise from decisions holding that even in the presence of explicit suggestion in the prior art, an invention might nonetheless be nonobvious if it is merely “obvious to try,” unless the prior art affords a basis for a reasonable expectation of success. *In re Merck & Co.*, 800 F.2d 1091 (Fed. Cir. 1986). Although the focus on

The Federal Circuit has chastised the USPTO for invoking the high skill level³² or even “common sense”³³ of PHOSITA to explain the obviousness of an invention consisting of multiple elements that are not combined in a single prior art reference. As a formal matter, the Federal Circuit has consistently acknowledged that the necessary “suggestion” to combine elements need not be explicit in prior art references, but might instead be found in “the knowledge of one of ordinary skill in the art” or in “the nature of the problem to be solved.”³⁴ But when the USPTO has relied upon skill level rather than prior art to explain why the differences between the prior art and the claimed invention would have been obvious, the Federal Circuit has often reversed, accusing USPTO of “falling into the hindsight trap.”³⁵ The court’s skepticism reached an apogee in the case of *In re Lee*,³⁶ in which it vacated a rejection for obviousness that rested on a combination of two references. Although the examiner and USPTO Board thought that “common knowledge and common sense” would provide motivation to combine the references, the Federal Circuit held that this approach was too conclusory to satisfy the requirements of the Administrative Procedure Act:

The Board’s findings must extend to all material facts and must be documented on the record, lest the “haze of so-called expertise” acquire insulation from accountability. “Common knowledge and common sense,” even if assumed to derive from the agency’s expertise, do not substitute for authority when the law requires authority Thus when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record.³⁷

reasonable expectation of success would seem to call for an inquiry directed towards PHOSITA, the Federal Circuit has sometimes required that the expectation of success be documented in the prior art. *See, e.g., In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991).

32. *Rouffet*, 149 F.3d at 1357-58.

33. *In re Lee*, 277 F.3d 1338, 1344-45 (Fed. Cir. 2002); *In re Zurko*, 258 F.3d 1379, 1385 (Fed. Cir. 2001).

34. *Beckson Marine, Inc. v. NFM, Inc.*, 292 F.3d 718, 728 (Fed. Cir. 2002); *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349 (Fed. Cir. 2000).

35. *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000) (“In this case, the Examiner and the Board fell into the hindsight trap.”); *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) (“In this case, the Board fell into the hindsight trap.”); *Rouffet*, 149 F.3d at 1358 (“[T]his court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness.”) (citation omitted).

36. 277 F.3d 1338 (Fed. Cir. 2002).

37. *Id.* at 1344-45 (citations omitted).

Recent decisions appear to retreat somewhat from this approach. The Federal Circuit has affirmed rejections for obviousness despite gaps in tracing the chain of inferences that support an implied “suggestion.”³⁸ It has also acknowledged that the scientific competence of examiners and administrative patent judges might equip them to draw informed inferences about the motivation that prior art would provide to PHOSITA.³⁹ Furthermore, the Federal Circuit has recognized that the suggestion or motivation to combine references need not be expressly stated in the prior art, but may come from reasoning based on established scientific principles or legal precedent.⁴⁰ Each of these approaches for rejecting a claim, however, requires “particular findings” grounded in objective evidence,⁴¹ with the practical effect of excluding from the analysis the tacit knowledge ordinary practitioners commonly possess. Once again, the effect is to divert attention from PHOSITA’s judgment and skill in evaluating inventions for obviousness, and to refocus it upon the meaning of the prior art references.

The concern about hindsight that motivates the focus on what can be documented in the prior art is a legitimate worry. Once one knows something, it can be a difficult mental exercise to pretend not to know it.⁴²

38. *E.g.*, *In re Huston*, 308 F.3d 1267, 1280 (Fed. Cir. 2002) (noting that the Board’s “conclusions are cryptic, but they are supported by the record”).

39. *E.g.*, *In re Berg*, 320 F.3d 1310, 1315 (Fed. Cir. 2003). The court in *Berg* stated: As persons of scientific competence in the fields in which they work, examiners and administrative patent judges on the Board are responsible for making findings, informed by their scientific knowledge, as to the meaning of prior art references to persons of ordinary skill in the art and the motivation those references would provide to such persons. Absent legal error or contrary factual evidence, those findings can establish a prima facie case of obviousness.

Id.

40. *In re Eli Lilly & Co.*, 902 F.2d 943 (Fed. Cir. 1990) (evaluating obviousness of claimed invention by comparing it with legal precedents analyzing relationship between invention and prior art); *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988) (motivation to combine references may come from “knowledge generally available to one of ordinary skill in the art”); *In re Sernaker*, 702 F.2d 989, 994-95 (Fed. Cir. 1983) (“[W]e agree, it was not necessary that the prior art suggest expressly or in so many words, the ‘changes or possible improvements’ the inventor made. It was only necessary that he apply ‘knowledge clearly present in the prior art.’”) (emphasis in original) (citation omitted). The case law is summarized for examiners in § 2144 of the Manual of Patent Examining Procedures, available on the Internet at http://www.uspto.gov/web/offices/pac/mpep/documents/2100_2144.htm.

41. *See In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000) (“Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto. Broad conclusory statements standing alone are not ‘evidence.’”).

42. *See Rachlinski*, *supra* note 7 (studying the problem of hindsight knowledge).

Moreover, the language of § 103 explicitly points to the prior art as a benchmark for evaluating the obviousness of the invention—“if the differences between the subject matter sought to be patented and the prior art are such that . . .”—and specifies that the obviousness of the invention should be considered “at the time the invention was made.”⁴³ Plainly, one cannot apply the standard without comparing the invention to the prior art.

But the statutory language just as plainly specifies that the obviousness of an invention is to be determined from the perspective of PHOSITA: “[T]he subject matter as a whole would have been obvious . . . to a person having ordinary skill in the art to which said subject matter pertains.”⁴⁴ The statutory specification of whose assessment of obviousness matters (obvious to whom?) is as essential to the evaluation as the statutory specification of the background prior art (obvious compared to what?). Indeed, it is difficult to make sense of a nonobviousness standard that could be applied simply by comparing the invention to the prior art without reference to some benchmark capacity for adapting the prior art to the problem at hand, and “ordinary skill in the art” is the benchmark specified by Congress.

III. WHAT PHOSITA KNOWS

Bringing this perspective to bear upon nonobviousness determinations undoubtedly requires more than scrutinizing the prior art. Active practitioners of a technology bring more to a problem than may be found in written prior art, including training, judgment, intuition, and tacit knowledge acquired through field experience. Scientific and technological work involve the application of craft skills that are familiar to practitioners but defy explicit articulation.⁴⁵ The gap between the skill of ordinary practitioners and the written record of prior art is likely to be particularly significant in in-

43. 35 U.S.C. § 103 (2000).

44. *Id.* § 103.

45. As explained by Jerome Ravetz:

The craftsman works with particular objects; he must know their properties in all their particularity; and his knowledge of them cannot be specified in a formal account. Indeed, no explicit description of a craftsman's techniques, and of the objects on which he works, can be more than the simplest elements of the subject. They can be useful for the beginner, but he must develop a personal, tacit knowledge of his objects and what he can do with them, if he is to produce good work. Indeed, much of his technique may not even have the character of conscious knowledge; by experience, his hands and eyes have taught themselves.

JEROME R. RAVETZ, SCIENTIFIC KNOWLEDGE AND ITS SOCIAL PROBLEMS 75-76 (1971).

dustrial technology, with its prevailing culture of secrecy and few incentives to publish. Even when industrial technologists disclose their work in publications or patents, they are likely to be guarded about what they reveal. The written record is a poor proxy for the background such practitioners would draw upon in solving problems or in evaluating the obviousness of an invention.

Within the USPTO, another proxy is readily available. Patent applications are initially evaluated by examiners, and rejections are appealed to the Board of Patent Appeals and Interferences. Patent examiners and Board members often have considerable scientific and technical training and may at one time have been practicing technologists. Through such training and experience, they may have absorbed tacit knowledge of the sort possessed by PHOSITA but not reflected in the written prior art record. This is a good reason for the Federal Circuit to defer to USPTO rejections of patent applications for obviousness,⁴⁶ even when the rejections rest in part on “common sense” and judgments about how skilled practitioners would connect the dots revealed in the prior art. When the Federal Circuit scolds examiners for failing to anchor their rejections in explicit suggestions in the prior art or in fully articulated reasoning therefrom, it effectively excludes tacit knowledge from the evaluation and clears the path for the issuance of patents on inventions that are within easy reach of practitioners of ordinary skill.

If anything, the tacit knowledge of patent examiners is likely to fall below that of current practitioners of the technology. Full-time examiners are at best former practitioners who have moved on to new careers that use very different skills. Their technological training and skills can only atrophy and get out of date as their skills as patent examiners grow. They will thus have less technological skill (and therefore find fewer inventions obvious) than the hypothetical PHOSITA, whose skill level is what matters under the statute.⁴⁷ If the USPTO is issuing patents for obvious inventions,

46. Arti Rai has argued that USPTO rejections should be entitled to greater deference than allowances because institutional incentives make it easier to allow patent applications than to reject them. Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1075-77 (2003). Instead, the Federal Circuit has done the opposite; on one hand requiring meticulous documentation by examiners of the basis for rejections, while on the other hand requiring those challenging the validity of an issued patent to establish the factual predicate for the challenge by clear and convincing evidence. *Id.*

47. Of course, in most fields patent examiners are likely to be more familiar than current practitioners with the content of prior art references because their current jobs require examiners to read references. But familiarity with the literature should not be confused with “ordinary skill in the art.” By focusing attention upon “the differences be-

it remains possible to challenge the validity of the patents. An issued patent enjoys a presumption of validity⁴⁸ but a defendant charged with infringement may nonetheless avoid liability by proving that the invention was obvious to a PHOSITA at the time it was made. This provides another opportunity to introduce the perspective of practitioners of ordinary skill in evaluating the obviousness of an invention. The defendant can offer testimony of an expert witness who will review the prior art and explain why it would have made the invention obvious, and the patent owner will predictably counter with its own expert telling the opposite story. But while this adversarial exchange of expert testimony might afford an extensive evidentiary record in support of a conclusion of either obviousness or nonobviousness, it is unlikely to yield a dispassionate technological assessment of the invention. By this point the stakes are high, the experts know who hired them, and the adversarial setting is more likely to polarize opinions and distort evidence than to reveal how the invention would have seemed at the time it was made to the inventor's contemporaries in the technology community. Moreover, the Federal Circuit requires that the facts underlying a holding of invalidity for an issued patent be shown by clear and convincing evidence,⁴⁹ an extraordinary burden in civil litigation that may be difficult to meet with opinion testimony based upon tacit knowledge.⁵⁰ The possibility of showing obviousness through expert testimony in infringement litigation is unlikely to correct for deficiencies in the evidentiary basis for the initial determination of nonobviousness in the USPTO.

IV. CONSULTING PHOSITA

A better mechanism for bringing the perspective of PHOSITA to bear upon obviousness determinations would be to permit the USPTO to consult with outside technology practitioners at an earlier stage in the process. Such a mechanism could supplement the expertise of examiners by giving them access to the actual knowledge of current practitioners, including

tween the subject matter sought to be patented and the prior art," the statutory standard necessarily presumes that the hypothetical PHOSITA is familiar with the prior art, but it does not stop there. It goes on to attribute "ordinary skill in the art" to the hypothetical evaluator.

48. 35 U.S.C. § 282 (2000).

49. *Buildex, Inc. v. Kason Indus., Inc.*, 849 F.2d 1461,1463 (Fed. Cir. 1988).

50. *See, e.g., Upjohn Co. v. Mova Pharm.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) ("The record does not contain substantial evidence in support of Dr. Rodriguez' conclusion that it would have been obvious to make this change. . . . At this critical point in the determination of obviousness, there must be factual support for an expert's conclusory opinion.").

tacit knowledge. It would permit the USPTO to document the obviousness of inventions that are not disclosed or explicitly suggested in prior art, but that are nonetheless obvious to one with the skills and tacit knowledge of PHOSITA. Moreover, this mechanism could be especially valuable in arts that are relatively new entrants into the patent system, such as computer-implemented inventions and business methods, for which the written record is a particularly inadequate approximation of the actual knowledge of PHOSITA.

The USPTO does not have any procedures for consulting the judgment of current technological practitioners when applying patentability standards prior to the issuance of patents. Although third parties may submit to the USPTO written citations to prior patents and printed publications with a bearing on patentability “at any time”⁵¹ and request reexamination of a patent on the basis of such prior art,⁵² the statute explicitly prohibits “protest or other form of pre-issuance opposition” while a patent application is pending unless the applicant gives written consent.⁵³ The USPTO has implemented this statutory directive in a rule that permits third parties to submit patents and printed publications relevant to a pending published patent application during a two-month window, but forbids the inclusion of “any explanation of the patents or publications, or any other information.”⁵⁴ Thus, these provisions limit third-party participation to written prior art references and leave no room for showing the skills or tacit knowledge of PHOSITA.⁵⁵ Moreover, the input that these provisions are likely to generate comes from interested parties rather than disinterested representatives of the technological community.

In contrast to the USPTO, most federal agencies charged with administering legal standards that turn on scientific or technical determinations have mechanisms in place for consulting the judgments of outside experts, including scientific advisory boards and peer review mechanisms.⁵⁶ Sometimes mandated by Congress and sometimes implemented voluntarily as a

51. 35 U.S.C. § 301.

52. *Id.* § 302.

53. *Id.* § 122(c).

54. 37 C.F.R. § 1.99(d) (2004).

55. The USPTO has offered alternative proposals for amending the patent laws to provide for a more robust system of post-grant review of patent claims as part of its *21st Century Strategic Plan*. The overall plan is posted at http://www.uspto.gov/web/offices/com/strat21/stratplan_03feb2003.pdf, and the specific action paper on post-grant review is posted at <http://www.uspto.gov/web/offices/com/strat21/action/sr2.htm> [hereinafter USPTO PLAN].

56. See generally SHEILA JASANOFF, *THE FIFTH BRANCH: SCIENCE ADVISORS AS POLICYMAKERS* (1990).

matter of agency discretion, these mechanisms take a variety of forms and have been subject to a variety of criticisms. At their best, these mechanisms provide agencies with a quality control check on the scientific basis for controversial decisionmaking, and thereby fortify the technocratic claims of agency staff to autonomy and deference. The George W. Bush Administration recently underscored the importance of peer review of the scientific basis for agency decisions through release of a Proposed Bulletin on Peer Review and Information Quality.⁵⁷

Criticism of agency peer review has highlighted some hazards to consider in adapting peer review to the needs of the patent system. Peer review inevitably delays administrative response times and adds to the burden of inertia confronting those who seek government action.⁵⁸ In some contexts, critics have charged that scientific review cloaks in scientific garb what are ultimately political choices made in the face of scientific uncertainty.⁵⁹ Many commentators have noted that peer review is prone to conflict of interest and reinforces bias in favor of orthodox views.⁶⁰

Concerns about delays and conflict of interest seem more pertinent to the challenge of providing peer input to the USPTO on determinations of obviousness than concerns about cloaking political choices in scientific garb or about reinforcing bias in favor of orthodox views. Obviousness determinations involve evaluations of past technological accomplishments rather than predictions of future consequences, leaving somewhat less room for distortion on the basis of politics or scientific orthodoxy. Sheila Jasanoff has suggested that peer review is better at “cementing consensus among scientists of similar disciplinary training and outlook” than it is at resolving scientific uncertainty or disagreement about political choices.⁶¹

57. OFFICE OF MANAGEMENT & BUDGET, PROPOSED BULLETIN ON PEER REVIEW AND INFORMATION QUALITY (2003) [hereinafter OMB PEER REVIEW BULLETIN], at http://www.whitehouse.gov/omb/inforeg/peer_review_and_info_quality.pdf.

58. See OMB Watch’s Response to OMB’s Peer Review Bulletin (Aug. 29, 2003), at <http://www.ombwatch.org/article/articleprint/1771/-1/1>.

59. E.g., JASANOFF, *supra* note 56, at 59-60 (describing demands for peer review of the basis for EPA risk regulation from industry and the Reagan administration during the 1980s).

60. E.g., Fiona Godlee & Kay Dickersin, *Bias Subjectivity, Chance, and Conflict of Interest in Editorial Decisions*, in PEER REVIEW IN HEALTH SCIENCES 57-78 (Fiona Godlee & Tom Jefferson eds., 1999) [hereinafter PEER REVIEW IN HEALTH SCIENCES]; Christine Wennerås & Agnes Wold, *Bias in Peer Review of Research Proposals*, in PEER REVIEW IN HEALTH SCIENCES, *supra*, at 79-89; David F. Horrobin, *The Philosophical Basis of Peer Review and the Suppression of Innovation*, 263 JAMA 1438 (1990).

61. JASANOFF, *supra* note 56, at 62.

This observation suggests that the identification of obvious inventions is a task for which peer review is relatively well suited.

Nonetheless, several features of the patent system complicate the task of developing a suitable mechanism.⁶² First, the USPTO makes decisions involving an extraordinarily broad range of technologies in comparison to the decisions made by other agencies such as the Environmental Protection Agency (EPA) or the Food and Drug Administration (FDA). This makes it much harder to put together a scientific advisory board with the right technological expertise to render timely advice. Second, the USPTO makes many small decisions, most of which ultimately have little impact, rather than a small number of high-impact decisions.⁶³ The time and expense of securing external evaluations for all USPTO decisions would be huge, and given that the majority of patents cover technologies that are never used, licensed, or litigated, it is hard to justify the expense.⁶⁴ It is difficult to identify *ex ante* the relative handful of decisions that will prove significant enough to warrant costly review.⁶⁵ Third, the legally-mandated confidentiality of pending patent applications might require deferral of disclosure to outsiders for at least 18 months after filing, and perhaps until issuance of a patent if the applicant is not seeking patent protection outside the United States.⁶⁶ Patent applicants from industry might legitimately worry about competitive harm from premature disclosure of their inventions to other practitioners. Even worse, a practitioner who works (or consults) for a competing firm might have a material interest in advising the USPTO to reject a patent claim despite (or even because of) its technical merits.

These features of USPTO decisions suggest parallels to two other peer review systems that differ in significant respects from the scientific advi-

62. The USPTO currently has no such mechanism in place. Although the USPTO has a Public Advisory Committee for Patents, the members of this group are for the most part lawyers and the matters upon which it advises the agency concern broad matters of policy rather than specific technical issues. 35 U.S.C. § 5 (2000); USPTO, Public Advisory Members, at <http://www.uspto.gov/web/offices/com/advisory/notices/members.html> (last visited Aug. 5, 2004) (posting membership roster).

63. Cf. OMB PEER REVIEW BULLETIN, *supra* note 57, at 9-11 (setting a threshold for triggering additional peer review requirements of “especially significant regulatory information” for decisions “with a possible impact of more than \$100 million in any year”).

64. Cf. Mark Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1508-11 (2001) (arguing that *ex ante* measures to weed out bad patents are unlikely to be worth the expense).

65. F.M. Scherer, *The Innovation Lottery*, in EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY 3-21 (Rochelle Dreyfuss et al. eds., 2001).

66. 35 U.S.C. § 122.

sory boards used by some federal agencies: peer review of submitted articles for scientific journals and peer review of grant proposals for sponsors. In contemplating the available options for introducing peer review into the USPTO, it might be instructive to consider the mechanisms used for these other systems and the criticisms that have been directed at them.

Journal peer review comes closest to approximating the challenge that the USPTO would face in gathering outside advice across a broad technological terrain. Although some scientific journals are narrowly specialized, some high-impact journals such as *Science* and *Nature* cover a broad range of subject matter. The editors of these journals need to draw upon diverse outside expertise to review and evaluate the claims made in submitted manuscripts.⁶⁷ Rather than turning to standing committees of outside advisors who meet and deliberate as a group, journal editors typically select individuals to consider particular manuscripts on an *ad hoc* basis.⁶⁸ Typically the reviewers know the identity of authors, but the reviewers themselves remain anonymous. Reviewers may recommend acceptance, rejection, or revisions to improve the manuscript.⁶⁹ Editors retain substantial control of the entire process, selecting reviewers, collecting their responses, and making other editorial decisions.⁷⁰

There is a burgeoning literature on journal peer review.⁷¹ Criticisms of journal peer review include that it is costly, slow, and subject to bias and conflict of interest.⁷² Yet journal peer review remains widespread in scien-

67. Cf. John Burnham, *The Evolution of Editorial Peer Review*, 263 JAMA 1323, 1324 (1990) ("Peer reviewing, in fact, developed in situations in which an editor or editors lacked the specialized knowledge that would have permitted them to make decisions about highly technical articles.").

68. DARYL E. CHUBIN & EDWARD J. HACKETT, *PEERLESS SCIENCE: PEER REVIEW AND U.S. SCIENCE POLICY* 91-95 (1990) [hereinafter CHUBIN & HACKETT].

69. Greg Myers has compared this process to the negotiations between patent applicant and examiner over the scope of claim language. Greg Myers, *Texts as Knowledge Claims: The Social Construction of Two Biology Articles*, 15 SOC. STUD. OF SCI. 593-630 (1985). The statutory prohibition against introduction of new matter into a patent disclosure would seem to be a significant distinction between the two processes. 35 U.S.C. § 132(a).

70. CHUBIN & HACKETT, *supra* note 68, at 89, 92-94.

71. See, e.g., CHUBIN & HACKETT, *supra* note 68; STEPHEN LOCK, *A DIFFICULT BALANCE: EDITORIAL PEER REVIEW IN MEDICINE* (1985); PEER REVIEW IN HEALTH SCIENCES, *supra* note 60. Many papers on peer review were generated for a series of international conferences on peer review organized by the *Journal of the American Medical Association* and published in special issues of 287 JAMA 21 (2002); 280 JAMA 3 (1998); 272 JAMA 2 (1994); 263 JAMA 10 (1990).

72. Drummond Rennie, *Editorial Peer Review: Its Development and Rationale*, in PEER REVIEW IN HEALTH SCIENCES, *supra* note 60, at 3-13.

tific publication and is widely considered a *sine qua non* for credibility and professionalism in scientific work.

Grant peer review systems, in keeping with the missions of research sponsors, tend to be more narrowly focused scientifically. Although details vary from one sponsor to the next, grant peer review systems often bring reviewers together to discuss grant proposals and to make recommendations for funding.⁷³ As with editorial peer review, the sponsor retains considerable control through the selection of reviewers and the retention of discretion to choose which proposals to fund. Grant peer review has been less studied than editorial peer, although it has provoked similar criticisms.⁷⁴ Grant peer review has been further criticized for bias against unorthodox approaches and ideas and in favor of scientists and institutions that already have established reputations.⁷⁵

Because judgments about obviousness are supposed to proceed from the perspective of ordinary practitioners who are steeped in orthodox views, the worry about peer review involving bias against unorthodox approaches seems inapposite in this context. (If anything, conventional thinking by patent peer reviewers should make them more easily impressed with the nonobviousness of unorthodox inventions, working in favor of those who take new technological approaches.) On the other hand, introducing peer review into the patent system could present a significant risk that conflict of interest will infect judgments about patentability.

Current practitioners are more likely to share the perspective of PHOSITA than past practitioners, whose expertise would likely overlap with that of the USPTO examiners. But current practitioners are especially likely to have conflicts of interest, particularly if they are working in the same industry as the patent applicant. This concern argues for a transparent process in which the identities of reviewers are disclosed⁷⁶ and review is deferred until applications have become public. It might also be better managed in a process that brings multiple reviewers together to deliberate

73. CHUBIN & HACKETT, *supra* note 68, at 19-24.

74. *Id.* at 28-43; Simon Wessely & Fiona Wood, *Peer Review of Grant Applications: A Systematic Review*, in PEER REVIEW IN HEALTH SCIENCES, *supra* note 60, at 14-27.

75. See, e.g., Gilbert W. Gillespie, Jr., et al., *Experience with NIH Peer Review: Researcher Cynicism and Desire for Change*, 10 SCI., TECH., & HUMAN VALUES 44 (1985); Rustum Roy, *Funding Science: The Real Defects of Peer Review and an Alternative to It*, 10 SCI., TECH., & HUMAN VALUES 73 (1985).

76. Cf. OMB PEER REVIEW BULLETIN, *supra* note 57, at 4-5 (arguing for a transparent peer review process to enhance the credibility of peer review of regulatory science).

and advise the USPTO about categories of patent applications rather than relying upon individual evaluations that are independently rendered and privately submitted to the agency.⁷⁷

The task confronting the patent system is not to select the most worthy technologies for reward, but simply to determine whether claimed inventions would have been obvious at the time they were made to PHOSITA. Although most peer review systems seek to enlist the expertise of recognized leaders in the field, less distinguished practitioners might be better suited to the task of inhabiting the perspective of a hypothetical PHOSITA. This should enlarge the universe of practitioners who could serve, but the diminished distinction associated with service might nonetheless make it harder to recruit reviewers.⁷⁸ It may be necessary (or prudent) to compensate reviewers for their service, perhaps under agreements that make them temporary employees of the government. The risk of relying upon volunteers would be that the ranks of those willing to serve would tend to be dominated by those with ulterior motives of defeating the patents of competitors.

V. CONCLUSION

In contrast to other agencies that make decisions at the cutting edge of science and technology, the USPTO has no mechanisms in place for consulting the judgment of currently active scientific and technological practitioners before it acts. The special needs and challenges of the patent system would undoubtedly call for modifications in established peer review mechanisms to develop a suitable model. Plainly, outside review of every patent application would not be cost-effective. In selected areas, however, outside review of categories of claims might be a useful source of information and validation for the USPTO in support of judgments that the Patent Act mandates be made from the perspective of persons having ordinary skill in the art. The goal should be to provide the USPTO with input from current technological practitioners at a relatively early stage in the process through a mechanism that yields disinterested advice as to what is obvious.⁷⁹ This input will supplement the disclosures of written prior art

77. See, e.g., JASANOFF, *supra* note 56, at 160-65 (describing successful experience of FDA Cardio-Renal Committee in deliberating upon guidelines for a product class, in which committee members functioned more as a team of consultants with different perspectives to offer and avoided adversarial conflict).

78. See, e.g., Rennie, *supra* note 72, at 8 (“Reviewers appreciate being recognized as experts and drawn into the academic body.”).

79. This proposal is different from pending recommendations from the USPTO, the FTC, and the National Academies of Science to amend the statute to provide for post-

references, providing a window into the tacit knowledge of contemporary practitioners and documenting the obviousness of inventions in fields where patents and printed publications understate the knowledge that PHOSITA would likely bring to a problem.

Although the mechanism would need to be designed with care to avoid violating the statutory confidentiality of unpublished patent applications and the prohibition against protest or pre-issuance oppositions after publication,⁸⁰ a potentially more serious obstacle lies not in the statute, but in the caselaw. Despite statutory direction to evaluate obviousness from the perspective of a person having ordinary skill in the art, the Federal Circuit has long relegated PHOSITA to a subsidiary role in evaluating the nonobviousness of inventions. If PHOSITA is presumed to be an unimaginative literalist who can only read the prior art and do what it explicitly suggests, there is little point in consulting actual practitioners to determine what would be obvious to such a person. But if, as recent decisions suggest, the Federal Circuit is willing to look outside the written record of prior art to evaluate the obviousness of an invention, then perhaps the time is ripe to explore new mechanisms for documenting the tacit knowledge of practitioners of ordinary skill.

grant review of issued patents. *See* FED'L TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY, EXECUTIVE SUMMARY 7-8 (2003) (Recommendation 1), *available at* <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>, *reprinted in* 19 BERKELEY TECH. L.J. 861, 869-70 (2004); NAT'L ACAD. OF SCIS., A PATENT SYSTEM FOR THE 21ST CENTURY 78-83 (Stephen A. Merrill et al. eds., forthcoming 2004), *available at* <http://www.nap.edu/books/0309089107.html>; USPTO PLAN, *supra* note 55 (Post-Grant Review of Patent Claims). Each of those recommendations provides for enhanced participation by parties with vested interests in defeating patent claims and allows those challenges to be brought before the USPTO rather than in litigation.

80. *See* 35 U.S.C. §§ 122(a), (c) (2000).