Michigan Technology Law Review

Volume 7 | Issue 1

2001

E-Obviousness

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Recommended Citation
Glynn S. Lunney Jr., *E-Obviousness*, 7 Mich. Telecomm. & Tech. L. Rev. 363 (2001).
Available at: https://repository.law.umich.edu/mttlr/vol7/iss1/9

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E-OBVIOUSNESS

*Glynn S. Lunney, Jr.**

Cite as: Glynn S. Lunney, Jr., *E-Obviousness*,
7 MICH. TELECOMM. TECH. L. REV. 363 (2001),
available at http://www.mttlr.org/volseven/lunney.html.

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> "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."
>
> U.S. CONST. art. 1., § 8, cl. 8.

In 1790, Congress enacted the first patent statute and imposed two substantive requirements before a patent could issue: novelty and

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utility.[1] Administrators of the patent system, however, recognized from the outset that patents ought not be granted for every trivial advance in an art;[2] some more substantial improvement was required.[3] In 1851, the Court formally tied this third substantive requirement for patentability to the language of the Constitution by distinguishing minor improvements reflecting "the work of the skilful mechanic" from substantial improvements reflecting "[the work] of the inventor."[4] For the next hundred years, courts struggled to quantify and define the advance necessary to qualify as the substantial improvement constitutionally required, but the process of crafting a substantive rule from the word "Inventors" proved to be difficult and ultimately unsatisfactory. As Judge Learned Hand complained, the concept of invention was "as fugitive, impalpable, wayward, and vague a phantom as exists in the whole paraphernalia of legal concepts."[5]

In 1952, Congress formally incorporated this third requirement, mandating substantial improvements, into section 103 of the patent statute.[6] Yet rather than phrase the requirement in terms of whether the advance constituted an "invention" or the work of an "Inventor," Congress described the necessary advance in terms of whether the claimed subject matter "would have been obvious at the time the invention was made to a person having ordinary skill in the art."[7] Although there was some suggestion to the contrary in both the statutory language and the legislative history,[8] the Court in 1966 held that section 103 "was in-

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1. Patent Act of 1790, § 1, 1 Stat. 109.

2. *See, e.g.*, P.J. Federico, *Operation of the Patent Act of 1790*, 18 J. PAT. OFF. SOC'Y 237 (1936).

3. *See* Knight v. Baltimore & O. R.R. Co., 14 F. Cas. 758, 759, (C.C. Md. 1840) (no. 7882) ("If, before his first patent . . . the same principle, in the same combination, which he describes as his improvement, was in public use, in ordinary carriages, upon public roads, the plaintiff was not entitled to a patent for applying the same thing to railway carriages, unless the improvements he claims contain something new *and material*, either in principle, in combination, or in the mode of operation, in order to adapt it to its new use.") (emphasis added); *see also* GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA § 17 (Boston, Charles C. Little & James Brown 1849).

4. Hotchkiss v. Greenwood, 52 U.S. (11 How.) 248, 267 (1851).

5. Harries v. Air King Prods., 183 F.2d 158, 162 (2d Cir. 1950).

6. Patent Act of 1952, § 103, codified as amended at 35 U.S.C. § 103 (Supp. 2000).

7. *Id.*

8. Two aspects of the statutory language were probably intended to redress excesses in the Court's obviousness jurisprudence. First, the statutory language requires the determination of obviousness to be made with respect to "the subject matter as a whole," 35 U.S.C. § 103(a) (Supp. 2000), which was almost certainly a response to the Court's approach to combination patents set forth in *Great A. & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147 (1950). Second, section 103 also states that "[p]atentability shall not be negatived by the manner in which the invention was made," 35 U.S.C. § 103(c) (Supp. 2000), which

tended merely as a codification of judicial precedents embracing the *Hotchkiss* condition" and "was not intended by Congress to change the general level of patentable invention."[9]

This action by Congress effectively changed the name for this third substantive requirement for patentability from "invention" to "nonobviousness." The key issue, however, remained the same: How much of an advance is required to support a patent? On this issue, the term "obviousness" provided little more inherent guidance than "invention." We know, following *Graham v. John Deere Co.* (and the language of section 103), that obviousness is to be determined against a background of the prior art, the differences between the claimed subject matter and the prior art, and the ordinary level of skill in the art.[10] We know that secondary considerations, such as commercial success, long-felt but unsolved needs, and the failures of others, are relevant.[11] We also know that the use of certain factors, such as hindsight, to demonstrate obviousness is improper.[12] Despite these guidelines, the key issue of how much of an advance is required remains curiously undefined. As a result, there is wide variation in application of the nonobviousness requirement. Courts apply the same approach for defining the obviousness inquiry and recite the same factors and rules, but nevertheless reach widely divergent results as to the level of advance required.[13] Such divergent results create substantial uncertainty regarding the availability and enforceability of patents. There has also been recent concern that an inability to define the level of advance required has led the Federal Circuit to abandon largely enforcement of the nonobviousness requirement and to permit patentability so long as there is some advance over the prior art.[14] Yet, such a de facto elimination of the obviousness requirement invites the creation of market power without offsetting public benefit.

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was almost certainly a response to the "flash of creative genius" standard set forth in *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 90 (1941).

9. *See* Graham v. John Deere Co., 383 U.S. 1, 17 (1966).

10. *Id.* at 17–18.

11. *Id.*; *see also* Simmons Fastener Corp. v. Illinois Tool Works, Inc., 739 F.2d 1573, 1575 (Fed. Cir. 1984) (holding that analysis of nonobviousness must include evaluation of secondary considerations where relevant evidence is present), *cert. denied*, 471 U.S. 1065 (1985).

12. *See, e.g., In re* Dembiczak, 175 F.3d 994, 998–99 (Fed. Cir. 1999) (reversing finding of obviousness where court concluded that "the Board fell into the hindsight trap").

13. *Compare* Newell Cos. v. Kenney Mfg. Co., 864 F.2d 757, 766–69 (Fed. Cir. 1988) (affirming district court's ruling of obviousness that relied on combining old elements), *with* Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc., 807 F.2d 955, 959–60 (Fed. Cir. 1986) (rejecting district court's ruling of obviousness as relying improperly on combining old elements); *see also infra* text and accompanying notes 116–121.

14. *See infra* text accompanying notes 37–44.

As patents expand into e-commerce and methods of doing business more generally, both the uncertainty and the risk of unjustified market power that the present approach generates suggest a need to rethink our approach to nonobviousness. If courts fail to enforce the nonobviousness requirement and allow an individual to obtain a patent for simply implementing existing methods of doing business through a computer, even where only trivial technical difficulties are presented, entire e-markets might be handed over to patent holders with no concomitant public benefit. If courts attempt to enforce the nonobviousness requirement, but leave undefined the extent of the advance required to establish nonobviousness, wide variance in the doctrine's application to particular cases will continue. The resulting uncertainty regarding patent enforceability will substantially undermine the patent system's ability to encourage innovation and serve the public interest more generally.

In an attempt to define the extent of the advance that should be required, this article reexamines the economic justifications for the nonobviousness requirement and for the patent system more generally. Traditionally, courts and commentators have justified the nonobviousness requirement on the ground that patents are monopoly rights, presumptively undesirable, and so require "drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not."[15] Under this traditional perspective, patents, like monopolies more generally, impose undesirable deadweight losses. To minimize such losses, the traditional view suggests that we should grant patents only to "those inventions which would not be disclosed or devised but for the inducement of a patent."[16] Only for such inventions are the benefits from the patent likely to outweigh the monopoly costs it generates. The nonobviousness requirement plays a central role in this process. By requiring inventions to demonstrate a significant level of technical advance before they may receive a patent, the nonobviousness requirement helps separate those inventions that would likely have been created, developed, and disclosed even in the absence of a patent from those that would not. The requirement thereby tends to ensure that only deserving inventions receive patents.

The Federal Circuit appears to have rejected this traditional, "patent-as-monopoly" perspective. In its place, the Federal Circuit has adopted a perspective in which patents are characterized simply as property and are therefore not monopoly at all. From this perspective, a

15. Graham v. John Deere Co., 383 U.S. 1, 9 (1966) (*quoting* Letter of Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), VI WRITINGS OF THOMAS JEFFERSON 181 (Washington ed.)).

16. *Id.* at 11.

patent on an invention is no different than the title on a piece of land. Both forms of ownership enable the owner to exclude others from a defined property, but neither is monopoly.[17] First articulated by then-Chief Judge Markey in a speech at the University of Chicago in April 1983,[18] this "simply-property" perspective quickly became a prominent feature of Federal Circuit jurisprudence.[19] The simply-property perspective is not a mere rhetorical flourish nor is it a quibble over semantics. Rather, it represents a fundamental challenge to the traditional perspective. By rejecting the characterization of a patent as monopoly, the simply-property perspective rejects the view that patents can impose deadweight losses. Absent the specter of these deadweight losses, the cost-benefit equation associated with granting a patent shifts sharply in favor of patents. And if patents do not generate monopolistic deadweight losses, there appears to be little reason to "weed out" undeserving advances or to restrict patents to only those advances that would not have occurred but for the inducement of a patent. To the contrary, under the simply-property perspective, an individual who has contributed something new and useful would seem presumptively entitled to a property right reflecting her contribution.

Although the simply-property perspective runs sharply contrary to the Court's view of patents and to established economic analysis,[20] the simply-property perspective accurately predicts the changes that have taken place and the continuing uncertainty in obviousness practice under the Federal Circuit.[21] The simply-property perspective also appears fundamentally incompatible with the traditional perspective. Where one sees monopoly, the other sees property. Before we can move forward on

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17. *See infra* text accompanying notes 76–82.

18. *See* Howard T. Markey, *Why Not the Statute?*, 65 J. PAT. OFF. SOC'Y 331, 331–33 (1983).

19. *See, e.g.*, Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1246–47 (Fed. Cir. 1989) ("Infringement having been established, it is contrary to the laws of property, of which the patent law partakes, to deny the patentee's right to exclude others from use of his property."); *In re* Kaplan, 789 F.2d 1574, 1578 n.3 (Fed. Cir. 1986); Jamesbury Corp. v. Litton Industrial Prods., Inc., 756 F.2d 1556, 1558–59 (Fed. Cir. 1985); *In re* Etter, 756 F.2d 852, 859 (Fed. Cir. 1985) ("The essence of all property is the right to exclude . . . ."), *cert. denied*, 474 U.S. 828 (1985); American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1367 (Fed. Cir. 1984); Union Carbide Corp. v. American Can Co., 724 F.2d 1567, 1574 n.4 (Fed. Cir. 1984); Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1548 (Fed. Cir. 1983); Carl Schenck AG v. Nortron Corp., 713 F.2d 782, 786 n.3 (Fed. Cir. 1983).

20. It also appears to run sharply counter to the conventional understanding of the Patents and Copyrights Clause as both limit and grant of congressional power. *See, e.g.*, Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 146 (1989) ("The Patent Clause itself reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the 'Progress of Science and useful Arts.' ").

21. *See infra* text accompanying notes 110–120.

e-commerce patent issues, we must determine whether these two perspectives can be reconciled or, at least, brought to a working relationship. Given the Federal Circuit's apparent adoption of the simply-property perspective, only through such a reconciliation can we hope to influence the Federal Circuit's direction on nonobviousness. Without this reconciliation, continued thundering about the potential monopoly costs of unjustified patents will prove unpersuasive, as such arguments have no place within the simply-property perspective.[22] Identifying the appropriate level of advance for the nonobviousness requirement calls therefore for an examination of the normative structure of the simply-property perspective to see if that structure offers any insight into nonobviousness's proper role.

The key, I believe, to reconciling these two perspectives and to developing a normatively persuasive model from the simply-property perspective is to recall that the central purpose of any property regime, from an economic perspective, is to ensure that scarce resources are allocated to their highest value use.[23] In the patent context, the scarce resource is creativity, by which I mean that skill, effort, and ability necessary to invent and bring a new product to market. As a result, for the patent system to make sense as a property regime, it must serve to allocate creativity to those uses that are most valuable to society. In defining the role of nonobviousness within such a property regime, the question becomes whether the patent system will better promote allocative efficiency—that is the allocation of scarce resources to their highest value use—by granting patents to all advances or only to some advances, and if only to some, which ones. To examine these questions, I have developed and will present a simple model exploring the patent system's role in allocating creativity among potential endeavors. Despite the initial thought that a simply-property perspective would justify a patent for any advance in the art, this model helps demonstrate that even under the simply-property perspective, only certain advances should receive patents. To do otherwise and grant a patent for every advance in the art, would almost certainly lead individuals to devote their creativity to less valuable uses and thereby frustrate the purpose of the patent system as property regime.

When we use this model to define which advances should receive patents, we find an answer surprisingly similar to that given by the traditional approach. Under a simply-property perspective, a patent should

22. *See infra* text and accompanying notes 103–108.

23. As Professor Baxter has explained, "[t]his is the classic economic criterion of optimal allocation." William F. Baxter, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 YALE L.J. 267, 268 n.7 (1966).

be awarded where the inventive costs associated with a new product or process represent a substantial portion of the total cost of the invention as marketed. This standard identifies those cases where the inventor is particularly susceptible to free riding by copying competitors or to market failure as a result of simultaneous invention and therefore needs the added protection of a patent to ensure a fair opportunity to earn a return on her creativity. Where this standard is satisfied, patent protection is appropriate, but not otherwise.[24] To implement this policy analysis, we should re-orient the nonobviousness inquiry away from asking whether an invention is obvious in the abstract toward asking whether the inventive expenditures actually present constitute a substantial fraction of the claimed invention's market price. I recognize that conducting the proposed analysis will raise some tough issues, such as what constitutes an inventive expenditure. Furthermore, the analysis may prove difficult to apply in some cases, for example where the claimed invention is not sold separately or is discovered serendipitously in the course of research directed at some other issue. Nevertheless, the proposed approach focuses attention on the relevant considerations far more precisely and concretely than does the present nonobviousness inquiry. As a result, the proposed approach should provide an objective, consistent, and sensible guide to the nonobviousness issue in the vast majority of cases.

Two special cases warrant mention, however. First, we must be careful not to deny patent protection to the especially gifted inventor who can recognize and solve a problem with little actual inventive expenditure where others have long-struggled with no success.[25] Second, we must be careful not to award patent protection to the especially untalented inventor who spends excessive inventive resources given the result achieved or to the rent-seeking inventor who expends excessive inventive resources in order to obtain a patent. To deal with these cases, relevant secondary considerations should be used to ensure that the actual inventive expenditures are neither unreasonably large nor unreasonably small given the claimed invention at stake.

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24. Professor Oddi has suggested considering invention costs directly in patentability determinations in his proposal for a new category of patents for revolutionary inventions, but did not recognize the need to consider invention costs as a fraction of the resulting product's total cost. *See* A. Samuel Oddi, *Beyond Obviousness: Invention Protection in the Twenty-First Century*, 38 AM. U. L. REV. 1097, 1127 (1989).

25. *See* 35 U.S.C. § 103(c) (Supp. 2000) ("Patentability shall not be negatived by the manner in which the invention was made."); *see also* 35 U.S.C. § 103 (1984) (Reviser's Note) ("The second sentence states that patentability as to this requirement is not to be negatived by the manner in which the invention was made, that is, it is immaterial whether it resulted from long toil and experimentation or from a flash of genius.").

To set the stage for this discussion, Section I begins with a brief review of the current state of nonobviousness and its diminished role under the Federal Circuit.

I. THE DEMISE OF THE NONOBVIOUSNESS REQUIREMENT

Since its formal recognition in *Hotchkiss* and until quite recently, the nonobviousness[26] requirement represented a substantial hurdle to overcome on the path to a valid patent. Even putting to one side those times where the Court's effort to turn a phrase yielded a standard near impossible to satisfy,[27] the requirement that an invention be not merely new and useful, but a sufficient advance over the prior art to warrant a patent played a vibrant and central role in separating patentable inventions from unpatentable advances. Yet the advent of the Federal Circuit and its vesting with exclusive jurisdiction as the intermediate court of appeals for patent litigation has radically reduced the role of the nonobviousness requirement in patent litigation. To explore this, we begin with an empirical investigation of the appellate treatment of nonobviousness over the last half-century.

A. *From Starring Role to Bit Player: An Empirical Examination of Obviousness*

To examine the changing role of nonobviousness within the patent system, I conducted an empirical investigation of all appellate decisions arising from patent infringement litigation[28] in eight time periods spread over the last fifty years.[29] From this examination, I determined for each time period: (1) the percentage of utility[30] patents[31] held invalid in those

26. For the sake of convenience, I will use the term "nonobviousness" to refer to this third requirement of patentability, rather than switching between "invention" and "nonobviousness" as the time period dictates.

27. *See, e.g.*, Cuno Eng'g Corp. v. Automatic Devices Corp., 314 U.S. 84, 91 (1941) ("That is to say, the new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling"); *see also* Graham v. John Deere Co., 383 U.S. 1, 15 n.7 (1966) (describing "flash of creative genius" language as "but a rhetorical embellishment of language going back to 1833").

28. Appeals from Patent and Trademark Office decisions as to whether to issue a patent were not considered.

29. The author used the Lexis Federal Court of Appeals database and a search of "core-terms(patent and infring!)" and an appropriate date restriction to identify initially the relevant cases. To supplement this initial search, an additional search of "core-terms(patent and obviousness)" with an appropriate date restriction was conducted.

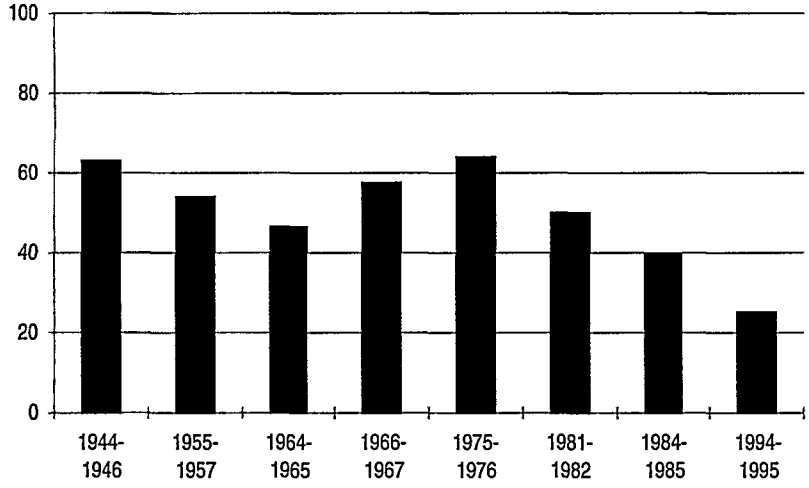
30. Rulings involving design or plant patents were not considered.

31. Where a single patent was at issue and a single resolution was applied to all claims for that patent at issue, the court's ruling was counted as a single result. Where two or more

cases where validity was at issue and decided[32]; and (2) the percentage of such invalidity rulings based upon obviousness.[33]

Figure 1 presents the percentage of patents held invalid in those cases where patent validity was at issue and decided.

FIGURE 1. PERCENTAGE OF PATENTS HELD INVALID WHERE VALIDITY AT ISSUE AND DECIDED



As Figure 1 suggests, for the six pre-Federal Circuit time periods studied, the percentage of patents held invalid cycled somewhat over time, starting with an initial peak of 63.16 percent in the 1944–1946 time period, declining to a low of 46.43 percent in 1964–1965, then after *Graham*, increasing to a second peak of 63.79 percent in 1975–1976, before falling to another low of 50 percent in 1981–1982, the final pre-Federal Circuit period.[34] After the Federal Circuit assumed jurisdiction

patents, or two or more claims, were at issue, and dealt with by the court as separate issue, they were counted as separate results. Thus, a single case might involve several patents and be counted as reaching several results.

32. Validity was not decided on appeal in particular cases for three reasons: (1) a finding as to validity was vacated on appeal and remanded for further factual development in the trial court; (2) validity was not raised in the trial court and/or on appeal by the parties; or (3) the appeal dealt solely with an issue of infringement and validity was not decided.

33. Where a single patent or group of claims was held invalid for different reasons, each basis decided by the appellate court for an invalidity result was counted as a separate result.

34. These figures for invalidity findings track those found in other studies of patent litigation in the pre-Federal Circuit era. *See* GLORIA K. KOENIG, PATENT INVALIDITY: A STATISTICAL AND SUBSTANTIVE ANALYSIS 4–22 to 4–23 (rev. ed. 1980) (finding only about 35 percent of litigated patents held valid for period from 1954 to 1978); Lawrence Baum, *The Federal Courts and Patent Validity: An Analysis of the Record*, 56 J. PAT. OFF. SOC'Y 758, 760 (1974) (noting that between 1921 and 1973 the circuit courts found nearly

of these appeals,[35] the invalidity rate fell to 39.34 percent in 1984–1985[36] and then fell to only 25 percent in 1994–1995.

Figure 1 thus tends to confirm the Federal Circuit's pro-patent reputation.[37] Moreover, the percentage of the invalid patents held invalid for obviousness fell even more sharply, as shown in Figure 2.

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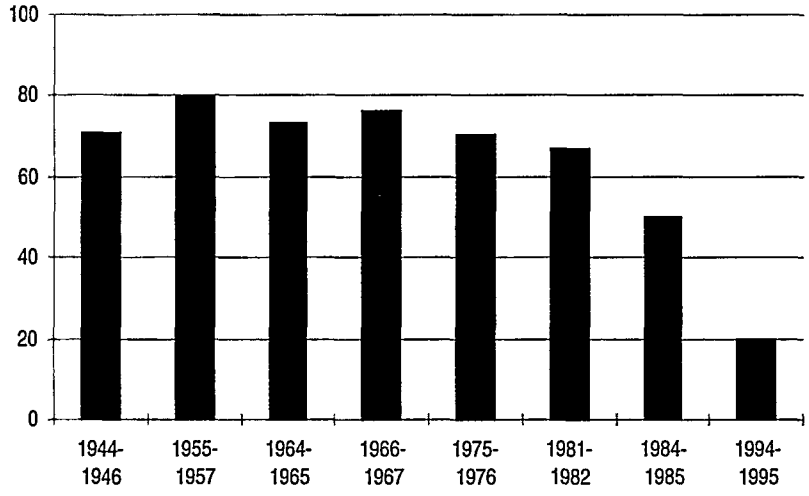
two-thirds of adjudicated patents invalid); P.J. Federico, *Adjudicated Patents: 1948–54*, 38 J. PAT. OFF. SOC'Y 233, 236 (1956) (finding that courts upheld that validity of patents in only 30–40% of the cases in which validity was an issue); Simone A. Rose, *Patent "Monopolyphobia": A Means of Extinguishing the Fountainhead*, 49 CASE W. RES. L. REV. 509, 561–62 (1999) (presenting data reflecting validity rate of 21.63 to 53.57 percent from 1944 through 1982).

35. Although the Federal Circuit was created by the Federal Courts Improvement Act of 1982, two of the cases from the 1984–1985 time period were from other circuits. *See* National Bus. Sys., Inc. v. AM Int'l, Inc., 743 F.2d 1227 (7th Cir. 1984); Fast Heat Element Mfg. Co. v. Rama Corp., 724 F.2d 802 (9th Cir. 1984). In these cases, the Seventh Circuit affirmed the trial court's ruling that that patent claims at issue were not proved invalid, see *National Bus. Sys.*, 743 F.2d at 1232–37, and the Ninth Circuit affirmed the trial court's ruling that the patent claims at issue were invalid for fraud on the PTO. *See Fast Heat Element Mfg. Co.*, 724 F.2d at 803.

36. This result is consistent with the data presented in other studies. *See* John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 205–06 (1998) (finding 54 percent overall validity in cases considered, including both district and circuit court final decisions from 1989 to 1996); Donald R. Dunner, *The Court of Appeals for the Federal Circuit—Its First Three Years: Introduction*, 13 AIPLA Q.J. 185, 186 (1985) (describing validity percentage of 53.6 percent for section 103 challenges before the Federal Circuit and of 50 percent for section 102 challenges); Mark A. Lemley, *An Empirical Study of the Twenty-Year Patent Term*, 22 AIPLA Q.J. 369, 419–20 (1994) (finding 56 percent of all litigated patents held valid during the period 1989–1994); Rose, *supra* note 34, at 562 (finding annual validity rates ranging from 55.56 to 77.42 percent during the period 1983–1993); *see also* Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 CALIF. L. REV. 805, 822 n.71 (1988).

37. On the Federal Circuit's pro-patent reputation, see Merges, *supra* note 36, at 822. *See also* Allison & Lemley, *supra* note 36, at 206 (noting that validity rate of litigated patents "is significantly higher than it was before the Federal Circuit was created").

FIGURE 2. PERCENTAGE OF INVALID PATENTS FOUND INVALID FOR OBVIOUSNESS



In Figure 2, the effect of the Federal Circuit on obviousness as a basis for patent invalidity is sharply evident. In the six pre-Federal Circuit time periods studied, obviousness was a basis for invalidity in 66.67 percent to 79.49 percent of the cases where a patent was held invalid. It was by far the most common basis for finding a patent invalid.[38] After the Federal Circuit assumed jurisdiction of these appeals, obviousness's importance sharply declined, with obviousness serving as a basis for invalidity in half of the cases where a patent was held invalid in 1984–1985, and as a basis for invalidity in only 20 percent of the cases where a patent was held invalid in 1994–1995.[39] Because the data in Figure 2 is presented as a fraction of the patents held invalid, the data is not simply a reaffirmation of the Federal Circuit's pro-validity approach. Rather, it demonstrates that, for a given number of patents held invalid, obviousness was far less likely to serve as the basis for that ruling under the

38. Hence the title of a collection of essays on nonobviousness, NONOBVIOUSNESS—THE ULTIMATE CONDITION OF PATENTABILITY (J. Witherspoon ed. 1980). Prior statistical studies have also identified obviousness as the principal basis for an invalidity finding. *See* KOENIG, *supra* note 34, at 5–50; Federico, *supra* note 34, at 249; *see also* Robert W. Harris, *Prospects for Supreme Court Review of the Federal Circuit Standards for Obviousness of Inventions Combining Old Elements*, 68 J. PAT. & TRADEMARK OFF. SOC'Y 66, 66 (1986) ("[O]bviousness is the most frequently dispositive patentability issue, since most inventions can meet the comparatively liberal requirements of utility and novelty.").

39. *See also* Allison & Lemley, *supra* note 36, at 208 (finding obviousness as basis for invalidity in 42 percent of cases studied from 1989 to 1996, but the study was based on final Federal Circuit and final district court decisions).

Federal Circuit than it was during the pre-Federal Circuit era. Thus, where Figure 1 confirms the Federal Circuit's pro-validity reputation, Figure 2 demonstrates that, among the available bases for challenging a patent's validity, obviousness has become particularly disfavored.[40]

Although we must be careful in drawing inferences from an examination of appellate case results alone,[41] these results strongly suggest that obviousness is much less central in appellate determinations of patent validity under the Federal Circuit. That obviousness has fallen into such disfavor is a fact unlikely to have gone unnoticed by the patent bar and those involved with patents more generally.[42] To the extent that the Federal Circuit is less likely to find a patent obvious, as this data suggests, the patent's value for purposes of licensing, assignment, and settlement will be altered. This trend also undoubtedly influences decisions such as whether to apply for, whether to grant, and whether to sue on a patent in any given case.[43] This is not to say that the nonobviousness requirement has passed away altogether. Even under the Federal Circuit, the nonobvious requirement retains some semblance of life, as it remains expressly present in section 103 of the Patent Act and has continued to serve as a basis for finding a patent invalid in some cases.[44]

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40. Of course, if the Federal Circuit desired to decrease the historical rate of invalidity results, obviousness presented an inviting and necessary target. As Figure 2 demonstrates, obviousness was the predominant basis for invalidity results in the pre-Federal Circuit era and therefore was going to have to be cut back to achieve any significant decline in invalidity results. In addition, because obviousness determinations are not bright-line, but a matter of balancing a number of factors, there was more room for cutting back on obviousness results, than there was for cutting back on, for example, anticipation results.

41. The difficulties in generalizing from appellate decisions alone have been well-documented, and include: (1) the potential for skewed samples because of the role private parties play in deciding to sue and appeal particular cases; see Baum, *supra* note 34, at 768; and (2) the tendency to appeal issues where the answer is less clear and there is more room for argument. *See also* Allison & Lemley, *supra* note 36, at 202–05 (noting other potential sources of population bias and inherent limitations on statistical analysis of decisions).

42. *See, e.g.*, Merges, *supra* note 36, at 822–23 ("These changing perceptions indicate that at a practical level, respect for patents is probably growing.").

43. For example, one implication of the Federal Circuit's unwillingness to find patents obvious is an increase in the expected value from any decision to sue. As the risk of an invalidity result decreases, the expected costs from filing suit (which include the risk of an invalidity finding) also decrease, and as a result, filing suit becomes attractive for increasingly less plausible infringement claims. Thus an increase in findings of no infringement should be expected as a consequence of a reduced risk of patent invalidity. *See also infra* text accompanying notes 89–92.

44. *See, e.g.*, Georgia Pac. Corp. v. United States Gypsum Co., 195 F.3d 1322 (Fed. Cir. 1999); Richardson-Vicks, Inc. v. Upjohn Co., 122 F.3d 1476, 1481–84 (Fed. Cir. 1997) (ruling that patented invention was obvious despite evidence of commercial success and other secondary considerations); Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461 (Fed. Cir. 1997); Para-ordinance Mfg. v. SGS Importers Int'l, 73 F.3d 1085 (Fed. Cir. 1995).

It appears, however, that nonobviousness's once dominant vitality has been substantially diminished.

B. *Reasons for the Shift*

1. The Doctrinal Changes in Obviousness

When we turn from the fact that this shift has occurred to how it has occurred, we find initially a number of doctrinal changes that the Federal Circuit has mandated in the obviousness inquiry. Of these changes, probably the most important has been the Federal Circuit's elevation of secondary considerations, such as commercial success, long felt but unsolved needs, and failure of others, to a central, if not dominant, role in the obviousness inquiry.[45] In *Graham* itself, the Court began with a three-part factual inquiry for addressing obviousness, directing courts to determine (i) the scope and content of the prior art; (ii) the differences between the prior art and the claimed invention; and (iii) the level of ordinary skill in the art.[46] The Court then identified "commercial success, long-felt but unsolved needs, failure of others, etc." as "secondary considerations" that "might be utilized" and "may have relevancy" to the obviousness inquiry.[47] Until the advent of the Federal Circuit, the various circuits universally read *Graham* as focusing the obviousness inquiry on the three factors of prior art, differences, and ordinary skill, with the secondary considerations relegated to a subsidiary role. In keeping with their reading of *Graham*, the various circuits consistently held that it was not reversible error for a trial court to fail to consider evidence of secondary considerations,[48] and would allow such evidence to "tip the scales" in favor of nonobviousness only in close cases where the three-factor *Graham* inquiry "[did] not produce a firm conclusion."[49]

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45. *See* Merges, *supra* note 36, at 823–37; Kevin Rhodes, Comment, *The Federal Circuit's Patent Nonobviousness Standards: Theoretical Perspectives on Recent Doctrinal Changes*, 85 NW. U. L. REV. 1051, 1071–72 (1991).

46. Graham v. John Deere Co., 383 U.S. 1, 17 (1966); *see also* 35 U.S.C. § 103(a) (Supp. 1996).

47. *Graham*, 383 U.S. at 17–18.

48. *See, e.g.*, Stevenson v. Grentec, Inc., 652 F.2d 20, 23 (9th Cir. 1981) (ruling that a "failure to consider secondary factors [in determining obviousness] [was] not reversible error").

49. Digitronics Corp. v. New York Racing Ass'n, 553 F.2d 740, 748–49 (2d Cir. 1977); *see also* Sakraida v. Ag Pro, Inc., 425 U.S. 273, 282–83 (1976) ("Though doubtless a matter of great convenience, producing a desired result in a cheaper and faster way, and enjoying commercial success, . . . [t]hese desirable benefits 'without invention will not make patentability.' ") (*quoting* Great A&P Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147, 153 (1950)); Medical Lab. Automation, Inc. v. Labcon, Inc., 670 F.2d 671, 675 (7th Cir. 1981).

In contrast, the Federal Circuit has identified evidence of secondary considerations as often "the most probative and cogent evidence in the record"[50] and has held that it "must always when present be considered."[51] Courts and commentators have long recognized that the secondary considerations "focus attention on economic and motivational rather than technical issues and are, therefore, more susceptible of judicial treatment than are the highly technical facts often present in patent litigation."[52] Moreover, these considerations provide a seeming answer to the otherwise difficult question of how to determine, after undertaking the three-part *Graham* inquiry, whether any given difference between the patent claims and the prior art is sufficient to satisfy the nonobviousness requirement. If the difference leads to commercial success, addresses a long felt but unsolved need, or solves a problem that others had attempted to solve but failed, then such facts can, at least in the Federal Circuit's view, reliably establish that the difference is a nonobvious advance.[53] As a result, evidence of commercial success or some other secondary consideration, although not conclusive on the issue of nonobviousness,[54] has become a central, rather than subsidiary,

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50. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538 (Fed. Cir. 1983).

51. *Id.*; *see also* Simmons Fastener Corp. v. Illinois Tool Works, Inc., 739 F.2d 1573 (Fed. Cir. 1984) (reversing finding of obviousness for failure to consider evidence of secondary considerations), *cert. denied*, 471 U.S. 1065 (1985); W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1555 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

52. *See, e.g.*, *Graham*, 383 U.S. at 36; Richard L. Robbins, Note, *Subtests of "Nonobviousness": A Nontechnical Approach to Patent Validity*, 112 U. PA. L. REV. 1169, 1172 (1964); *see also* Jochen Pagenberg, *The Evaluation of the "Inventive Step" in the European Patent System—More Objective Standards Needed*, 9 INT'L REV. INDUS. PROP. & COPYRIGHT L. 1, 121 (1978) (arguing that the use of circumstantial evidence allows an objective examination without precluding practical application and is an easier approach for judges and lawyers to use).

53. *See, e.g.*, Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1580 (Fed. Cir. 1997) ("In sum, the record supplies objective evidence of nonobviousness, including Baxter's recognition of the importance of this invention, evidence of commercial success, and evidence of the failure of others to solve the recognized problem. This objective evidence, combined with the lack of a teaching or suggestion to combine, requires a holding of nonobviousness.").

54. *See* Richardson-Vicks, *supra* note 44, at 1481–84 (ruling that patented invention was obvious despite evidence of commercial success and other secondary considerations); Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1472 (Fed. Cir. 1997) ("In reaching an obviousness determination, a trial court may conclude that a patent claim is obvious, even in the light of strong objective evidence tending to show non-obviousness."); B.F. Goodrich Co. v. Aircraft Braking Sys. Corp., 72 F.3d 1577, 1583 (Fed. Cir. 1996) ("Considering the minor difference between the claimed invention and the [prior art], the secondary considerations were not sufficiently compelling" to preclude a conclusion of obviousness.); Newell Cos. v. Kenney Mfg. Co., 864 F.2d 757, 768–69 (Fed. Cir. 1988), *cert. denied*, 493 U.S. 814 (1989) (noting that secondary considerations "must be considered, [but] they do not control the obviousness conclusion").

factor in the obviousness inquiry under the Federal Circuit.[55] In keeping with this more central role, the Federal Circuit has renamed these considerations as "objective evidence of nonobviousness."[56] The Federal Circuit has also: (1) employed a broader range of secondary considerations as proof of nonobviousness[57]; (2) relaxed the required showing that the commercial success was the result of the nonobvious nature of the claimed invention, rather than some other factor, such as marketing[58]; and (3) restricted attempts to use secondary considerations (or the lack thereof) to establish that a patent was obvious.[59]

This increased reliance on secondary considerations tends to reduce directly the likelihood that a litigated patent will be found obvious. As Professor Edmund Kitch warned more than thirty years ago, an increased reliance on secondary considerations, such as commercial success, to resolve questions of patent validity almost necessarily leads to a rule "that all patents that are litigated should be held valid."[60] As Professor Kitch explained, "it is unlikely that patents

55. *See, e.g.*, Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044 (Fed. Cir. 1988), *cert. denied*, 109 S. Ct. 75 (1988) (reversing district court's finding of obviousness for failing to give enough weight to evidence of secondary considerations); Alco Standard Corp. v. Tennessee Valley Authority, 808 F.2d 1490, 1492, 1499–1501 (Fed. Cir. 1986), *cert. dismissed*, 483 U.S. 1052 (1988) (holding patent valid on basis of secondary considerations despite the fact that the prior art analysis suggested that patent was obvious). Indeed, the Federal Circuit has taken to identifying secondary considerations as a fourth *Graham* factor. *See, e.g.*, Robotic Vision Systems, Inc. v. View Eng'g, Inc., 189 F.3d 1370, 1376 (Fed. Cir. 1999); Oscar Mayer Foods Corp. v. Con-Agra, Inc., 35 U.S.P.Q.2d (BNA) 1278, 1280 (Fed. Cir. 1994) ("Obviousness is a question of law with four factual predicates . . . ."); Modine Mfg. Co. v. Allen Group, Inc., 917 F.2d 538, 541 (Fed. Cir. 1990); Loctite Corp. v. Ultraseal, Ltd., 781 F.2d 861, 872–73 (Fed. Cir. 1985).

56. *See, e.g.*, Gillette Co. v. S.C. Johnson & Son, Inc., 919 F.2d 720, 725 (Fed. Cir. 1990); *Modine Mfg.*, 917 F.2d at 541.

57. *See* Robert W. Harris, *The Emerging Primacy of "Secondary Considerations" as Validity Ammunition: Has the Federal Circuit gone too far?*, 71 J. PAT. & TRADEMARK OFF. SOC'Y 185, 191–92 (1989); Rhodes, *supra* note 45, at 1071–72.

58. *See, e.g.*, Merges, *supra* note 36, at 824–25.

59. *See* Harris, *supra* note 57, at 193. *Compare* Graham v. John Deere Co., 383 U.S. 1, 18 (1966) (noting that secondary considerations "may have relevancy . . . as indicia of obviousness or nonobviousness"), *with* Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1478 (Fed. Cir. 1998) (noting that evidence of secondary factors "can only further support nonobviousness") *and* Custom Accessories, Inc. v. Jeffery-Allan Indus., Inc., 807 F.2d 955, 960 (Fed. Cir. 1986) (holding that absence of commercial development or other secondary considerations is not evidence of obviousness, but only "a neutral factor"). *Compare* Concrete Appliances Co. v. Gomery, 269 U.S. 177, 185 (1925) (relying on near-simultaneous invention by others to support ruling of obviousness), *and* Fred Whitaker Co. v. E. T. Barwick Indus., Inc., 551 F.2d 622, 628 (5th Cir. 1977) (same), *with* Environmental Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 698 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984) (ruling that evidence of near-simultaneous invention by others not evidence of obviousness).

60. Edmund Kitch, Graham v. John Deere Co.*: New Standards for Patents*, 1966 SUPREME COURT REV. 293.

that are not commercially successful will be brought to litigation."[61] As a result, to the extent that commercial success becomes an important factor in determining a patent's validity, the very fact that the patent is worth litigating should establish its validity.[62]

In addition to elevating the secondary considerations to a primary role, the Federal Circuit has also rejected application of a stricter obviousness standard, often known as the synergism requirement, for so-called "combination" patents, where a claimed invention consists of a combination of elements already found separately in the prior art.[63] Unlike novelty, where the claimed invention is compared with a single prior art reference,[64] non-obviousness compares the claimed invention with the relevant prior art as a whole.[65] As the Federal Circuit has explained, obviousness is judged from the perspective of the hypothetical "'person having ordinary skill in the art' . . . who is presumed to be aware of all the pertinent prior art."[66] This presumed awareness creates something of a logical puzzle, however. If our hypothetical person is aware of all the pertinent prior art and the prior art includes each element of the patent claim, then presumably knowledge of a particular combination of prior art elements is encompassed by knowledge of the elements as a whole. As a result, where the individual elements of a claimed invention can all be found in the prior art, the prior art might also be thought to encompass any given combination of those elements. Apparently following a similar logical chain, the U.S. Supreme Court has tended to presume that patents based upon combinations of prior art

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61. *Id.*

62. *Id.*

63. *Compare* Sakraida v. Ag Pro, Inc., 425 U.S. 273, 282 (1976) (ruling that combination patent was obvious for failing to achieve a "synergistic" result) *and* Anderson's-Black Rock, Inc. v. Pavement Salvage Co., 396 U.S. 57, 61 (1969) (ruling that combination patent was obvious where combination of old elements did not "result in an effect greater than the sum of the several effects taken separately"); *with* Chore-Time Equip., Inc. v. Cumberland Corp., 713 F.2d 774, 781 (Fed. Cir. 1983) (rejecting any "synergism" or "synergistic result" requirement for patents on combinations of existing or known elements) *and* Medtronic, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 1566 (Fed. Cir. 1983) (holding that there is no statutory basis for identifying "combination" patents and applying a more stringent obviousness test to such patents).

64. *See, e.g.*, Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1282 (Fed. Cir. 2000) ("[I]nvalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.").

65. *See, e.g.*, Graham v. John Deere Co., 383 U.S. 1, 34–37 (1966) (combining elements from prior art patents to conclude that claimed invention was obvious).

66. Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1985).

elements are obvious.[67] Only where some intervening consideration, such as unusual or surprising consequences from the combination, broke the logical chain would the Court rule a combination patent nonobvious.[68]

But the Federal Circuit has refused to follow the Supreme Court's lead on this issue.[69] Instead, the Federal Circuit has pretended that the reasoning of the Court is nonsensical,[70] and on that basis, has substituted its own approach for the Court's in these cases. Specifically, the Federal Circuit permits an obviousness determination to be based upon combining elements from different prior art references only if the prior art contains some suggestion or reason to combine the elements in the manner set forth in the claim (the "suggestion test").[71] Although the Federal Circuit has permitted "implicit" suggestions to satisfy the test,[72] the Federal Circuit's test essentially reverses the key presumption in these cases. Where all of the elements were known, the Supreme Court presumed that any given combination was obvious, unless there was

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67. *See, e.g., Sakraida*, 425 U.S. at 282; *Anderson's-Black Rock, Inc.*, 396 U.S. at 61; Great A. & P. Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147 (1950).

68. *See* United States v. Adams, 383 U.S. 39, 48 (1966) (ruling that patent was nonobvious where combination of prior art elements "'wholly unexpectedly' has shown 'certain valuable operating advantages over other batteries' while those from which it is claimed to have been copied were long ago discarded").

69. *See In re* Dillon, 919 F.2d 688 (Fed. Cir. 1990) (en banc), *cert. denied*, 500 U.S. 904 (1991); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1134 (Fed. Cir. 1985); *see also* Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 9–10 (1989).

70. *See* Medtronics, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 1566 (Fed. Cir. 1983) (refusing to follow Court's approach to combination patents "because virtually every claimed invention is a combination of old elements"); *see also* Environmental Designs v. Union Oil Co., 713 F.2d 693, 698 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984) ("Virtually all inventions are combinations and virtually all are combinations of old elements.").

71. *See* Robotic Vision Systems, Inc. v. View Eng'g, Inc., 189 F.3d 1370, 1377 (Fed. Cir. 1999) ("The party seeking a holding of invalidity based on a combination of two or more prior art teachings must show some motivation or suggestion to combine the teachings."); Micro Chem., Inc. v. Great Plains Chem. Co., Inc., 103 F.3d 1538, 1546 (Fed. Cir. 1997) ("A determination of obviousness must involve more than indiscriminately combining prior art; a motivation or suggestion to combine must exist.") (citation omitted); *In re* Laskowski, 871 F.2d 115, 117 (Fed. Cir. 1989) (reversing PTO rejection of patent application for band saw wheel because although prior art contained each element set forth in the patent claims, the prior art did not contain any suggestion to combine the elements in the manner set forth in the claims); *see also In re* Oetiker, 977 F.2d 1443, 1448 (Fed. Cir. 1992) (Nies, C.J., concurring) ("While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or prior art specifically suggest making the combination.").

72. *See, e.g.*, Riverwood Int'l Corp. v. Mead Corp., 212 F.3d 1365, 1366 (Fed. Cir. 2000) ("In addition, when obviousness is based on particular prior art references, there must be a showing of a suggestion or motivation to combine the teachings of those references, though it need not be expressly stated.").

some reason that suggested otherwise. The Federal Circuit, on the other hand, presumes that any given combination is nonobvious, unless there is some suggestion in the prior art otherwise.

2. The Federal Circuit's Perspective on Patents and Obviousness

As important as these (and other) doctrinal changes have been in reshaping the role of obviousness in patent litigation, equally important has been the Federal Circuit itself and the intellectual perspective it brings to patent litigation. Created, at least in part, in response to perceived attacks on the patent system from a federal judiciary often openly hostile to patents and the patent system,[73] the Federal Circuit has taken its role as defender of the patent system seriously.[74] In pursuit of that perceived role, the Federal Circuit has at times shown a reckless indifference to its sworn duty to "uphold the law," which presumably includes following the binding precedent of the Court even where (or perhaps, especially where) certain members of the Federal Circuit believe the Court is wrong.[75]

As part of this perceived role, the Federal Circuit has rejected the traditional judicial view that patents are monopolies, presumptively undesirable and, in the words of Thomas Jefferson, an "embarrassment."[76]

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73. *See, e.g.*, Graham v. John Deere Co., 383 U.S. 1, 18–19 (1966) (remarking on the "notorious difference applied by the Patent Office and by the courts" to the obviousness issue); Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147, 156–58 (1950) (Douglas, J., concurring) ("The fact that a patent as flimsy and spurious as this one had to be brought all the way to this Court to be declared invalid dramatically illustrates how far our patent system frequently departs from the Constitutional standards which are supposed to govern.").

74. *See* Dreyfuss, *supra* note 69, at 26–30 (noting that "anecdotal evidence suggests that the CAFC is a good court for patentees," while pointing to other doctrinal developments that serve the broader public interest).

75. *See, e.g.*, Harris, *supra* note 38, at 77 ("The CCPA and CAFC decisions employing the suggestion test do not offer an adequate, well-reasoned analysis justifying the suggestion test in light of modern Supreme Court case law. Instead, the CCPA and the CAFC simply continued to employ the suggestion test, stated by the CCPA in 1938, while largely ignoring the Supreme Court's strict scrutiny standard."). I can certainly understand the difficulty presented in having to not only follow, but actively enforce, a decision with which one wholeheartedly disagrees, but for a judge who finds herself unwilling or unable to enforce the binding precedent of the Court, there is a simple solution: resign.

76. The Court has described patents as monopolies on a number of occasions. For example, in *Precision Instrument Mfg. Co. v. Automotive Maintenance Machinery Co.*, the Court wrote:

> A patent by its very nature is affected with a public interest. As recognized by the Constitution, it is a special privilege designed to serve the public purpose of promoting the "Progress of Science and useful Arts." At the same time, a patent is an exception to the general rule against monopolies and to the right to access to a free and open market. The far-reaching social and economic consequences of a patent,

As Judge Clevenger explained in his dissent from denial of a rehearing en banc in *Hughes Aircraft Co. v. United States*:[77] "We have come a long way from the days when judges frowned on patents as pernicious monopolies deserving scant regard."[78] Although precisely who Judge Clevenger means by "[w]e" is unclear, the Federal Circuit has made a point of chastising parties for referring to a patent as a "monopoly,"[79] has disapproved the characterization of a patentee as a "monopolist,"[80] and has cautioned trial courts that jury instructions that identify a patent as a "monopoly" from which the public must be "protected" "are likely to be prejudicial and should be avoided."[81] In the view of the Federal Circuit, patents are simply a form of property, not monopoly. As then-Chief Judge Markey explained in 1983: A patent, under the statute, is property. 35 U.S.C. § 261. Nowhere in any statute is a patent described as a monopoly. The patent right is but the right to exclude others, the very definition of "property."[82]

Not only has this "simply-property" perspective colored the Federal Circuit's doctrinal development of the obviousness doctrine and its application to particular cases, but it has also undermined the obviousness doctrine in two more important respects. First, it has led the Federal Circuit to avoid the issue of patent validity altogether when the litigation can be resolved on other grounds, such as non-infringement. This avoidance of the validity issue represents a sharp break with pre-Federal

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> therefore, give the public a paramount interest in seeing that patent monopolies spring from backgrounds free from fraud or other inequitable conduct and that such monopolies are kept within their legitimate scope.

324 U.S. 806, 816 (1945); *see also* Blonder-Tongue Labs., Inc. v. University of Ill. Foundation, 402 U.S. 313, 342–43 (1971) ("Although recognizing the patent system's desirable stimulus to invention, we have also viewed the patent as a monopoly which, although sanctioned by law, has the economic consequences attending other monopolies."); United States v. Line Material Co., 333 U.S. 287 (1948); United States v. Univis Lens Co., 316 U.S. 241 (1942); United States v. Masonite Corp., 316 U.S. 265 (1942).

77. 148 F.3d 1384 (Fed. Cir. 1998).

78. *Id.* at 1385.

79. *See* Carl Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 786 n.3 (Fed. Cir. 1983) ("It is but an obfuscation to refer to a patent as 'the patent monopoly' or to describe a patent as an 'exception to the general rule against monopolies.'"); *see also In re* Kaplan, 789 F.2d 1574, 1578 (Fed. Cir. 1986) (noting that the PTO Solicitor "properly deplores [another party's] use of the ambiguous word 'monopoly,' preferring to use the more accurate and less emotion-generating expression 'extension of patent rights'"). The Federal Circuit has avoided acknowledging that it has often been the Court itself that has defined patents as monopolies and as "an exception to the general rules against monopolies." *See supra* cases cited in note 76.

80. *See* Jamesbury Corp. v. Litton Industrial Prods., Inc., 756 F.2d 1556, 1559 (Fed. Cir. 1985) ("Further, this court has disapproved of a challenger's characterization of a patentee by the term 'monopolist,' which is commonly regarded as pejorative.").

81. *Id.*

82. *Carl Schenck, A.G.*, 713 F.2d at 786 n.3.

Circuit practice. In *Sinclair & Carroll Co. v. Interchemical Corp.*,[83] the Court specifically emphasized the need to address the question of validity in patent litigation:

> There has been a tendency among the lower federal courts in infringement suits to dispose of them where possible on the ground of non-infringement without going into the question of validity of the patent. It has come to be recognized, however, that of the two questions, validity has the greater public importance, and the District Court in this case followed what will usually be the better practice by inquiring fully into the validity of this patent.[84]

Although courts did not take this statement as an invariable command,[85] the routine practice before the advent of the Federal Circuit was to adjudicate a patent's validity even where infringement was not found.[86] This practice is clearly reflected in the empirical data I collected. Of the cases from the six pre-Federal Circuit time periods, fewer than 10 percent were resolved by a finding of non-infringement alone.

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83. 325 U.S. 327 (1945).

84. *Id.* at 330; *see also* Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83, 100 (1993) (reversing Federal Circuit's practice of vacating findings of invalidity where non-infringement found in light of "strong public interest" in "resolving questions of patent validity"); Blonder-Tongue Labs., Inc. v. University of Ill. Foundation, 402 U.S. 313 (1971) (reversing doctrine of licensee estoppel and allowing a licensee to contest the validity of a patent in the light of the strong public interest in questions of patent validity); Slawson v. Grand St., P.P. & F.R.R. Co., 107 U.S. 649, 652 (Oct. 1882 term) ("Every suitor in such a cause should, therefore, understand that the question whether the invention, which is the subject matter in controversy, is patentable or not is always open to the consideration of the court, whether the point is raised by the answer or not."); Hieger v. Ford Motor Co., 516 F.2d 1324, 1327 (6th Cir. 1975) ("It is now well recognized that an invalid patent is a blight on 'the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain,' and should be expunged whenever the issue can be reached.") (citation omitted). *But see* Altvater v. Freeman, 319 U.S. 359, 363 (1943) ("To hold a patent valid if it is not infringed is to decide a hypothetical case.").

85. *See* Harris v. Air King Prods., Inc., 183 F.2d 158, 162 (2d Cir. 1950) (Hand, J.) ("The passage [quoted above from *Sinclair*] was not put in the form of a peremptory direction, but rather of a cautionary admonition to be followed when that is the more convenient course."); Helbush v. Finkle, 170 F.2d 41, 42 (9th Cir. 1948); *see also* Marvin Glass & Assocs. v. Sears, Roebuck & Co., 448 F.2d 60, 62–63 (5th Cir. 1971) (affirming trial court on non-infringement alone given narrowing of patent that precluded patent holder from using the patent "to exact tribute from competitors or to foreclose the talking book field"); Borden Co. v. Clearfield Cheese Co., 369 F.2d 96, 100 (3d Cir. 1966).

86. *See, e.g., Hieger*, 516 F.2d at 1327; Harrington Mfg. Co. v. White, 475 F.2d 788, 793 (5th Cir. 1973); M.O.S. Corp. v. John I. Haas Co., 375 F.2d 614, 617, 620–21 (9th Cir. 1967) (ruling patent invalid on appeal where trial court had found non-infringement); Maytag Co. v. Murray Corp., 318 F.2d 79, 80 (6th Cir. 1963); Apex Electrical Mfg. Co. v. Altorfer Bros. Co., 238 F.2d 867, 871 (7th Cir. 1956); Brunswick-Balke-Collender Co. v. American Bowling & Billiard Corp., 150 F.2d 69, 70 (2d Cir. 1945) (ruling on issue of validity and finding patent invalid where trial court had ruled on non-infringement alone).

If patents are simply property and not monopoly,[87] however, then there is only the private, and no "greater public," interest at stake in any given patent's validity. As a result, there is no need to reach out and address a patent's validity when that issue is unnecessary to decide a case. Perhaps for that reason, the Federal Circuit has preferred a "validity-only-if-necessary" approach. Rather than implement its preferred approach by challenging *Sinclair* directly, the Federal Circuit has taken advantage of the fact that *Sinclair*, although indicating the "better practice," left open the possibility that resolving a case on non-infringement alone might sometimes be appropriate. The Federal Circuit has taken this leeway and used it to approve a general practice of resolving cases on non-infringement alone, at least "[w]here . . . non-infringement is clear and invalidity is not plainly evident."[88] Although this statement sets forth a standard not markedly different from the standard sometimes recited in the pre-Federal Circuit era,[89] the practice under the Federal Circuit has been quite different. In contrast to the pre-Federal Circuit era where fewer than 10 percent of the cases were resolved on non-infringement alone, in the 1994–1995 time period, the Federal Circuit resolved 43.82 percent of the patent infringement cases before it on non-infringement alone without addressing validity.[90]

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87. Proponents of the simply-property perspective apparently assume that property and monopoly are opposites so that patents are either property or monopoly, but are not both. But "monopoly" and "property" are not opposites, nor are they mutually exclusive. The opposite of property is not monopoly, but a commons. The opposite of monopoly is not property, but competition. Monopoly and property address different issues. Property refers to a set of legal relationships between one individual, others, and a thing (intangible or otherwise); monopoly refers to the character of the market in which the thing is traded. Thus, a patent can both be property and create monopoly. *See* Glynn S. Lunney, Jr., *Reexamining Copyright's Incentives-Access Paradigm*, 49 VAND. L. REV. 483, 518 n. 143 (1996) [hereinafter Lunney, *Reexamining Copyright*] ("The fact that [copyrights, patents, trademarks, and other forms of 'intellectual property'] are property, however, tells us nothing, or at least nothing interesting, about the degree of competition presents in the market in which such property is traded. . . . Property is not the opposite of monopoly, but the foundation of it . . . .") (citations omitted).

88. *See* Nestier Corp. v. Menasha Corp., 739 F.2d 1576, 1581 (Fed. Cir. 1984) ("While the better practice is to treat both the validity and infringement issues, particularly in view of the public interest in the validity issue, it is not always necessary to do so. Where, as here, non-infringement is clear and invalidity is not plainly evident, it is appropriate to treat only the infringement issue.") (citations omitted).

89. *See, e.g.*, *Helbush*, 170 F.2d at 42 ("We do not hold that the question of validity must be determined in every patent infringement case in which it is raised. There may be cases in which non-infringement is so apparent as to make it unnecessary to determine the question of validity.").

90. The Federal Circuit has further insulated patents from validity challenges by two additional rules. First, once the claim of patent infringement has been resolved adversely to the patent holder, there is no longer a case or controversy sufficient to enable the alleged infringer to maintain a declaratory judgment action of invalidity. *See* Augustine Med., Inc. v. Gaymar Indus., 181 F.3d 1291, 1304 (Fed. Cir. 1999) (noting that "dismissal of [patent infringement] claims with prejudice eliminated any potential case or controversy and thereby

In theory, the Federal Circuit's preference for resolving cases on non-infringement alone does not necessarily undercut the nonobviousness requirement. One could argue that it merely delays resolution of the nonobviousness issue to those cases where infringement is found. Yet, as a practical matter, here, as elsewhere, delayed justice often means no justice at all. By postponing the validity issue to a later case, the Federal Circuit has undercut the nonobviousness requirement in two respects. First, the increased emphasis on non-infringement is likely to affect litigation strategies as alleged infringers shift more of their resources towards proving non-infringement and less towards proving invalidity in response to the increased likelihood that validity will not be addressed and any resources spent thereon wasted. The preference for resolving cases on non-infringement alone will therefore likely lead to some marginal reduction in the effort directed at establishing a patent's obviousness. Second, where a patent has substantial value, the risk of a declaration of invalidity represents a substantial potential loss that may result from filing a patent infringement suit. For such patents, the Federal Circuit's increased willingness to resolve cases on non-infringement alone reduces the risk to a patent holder of losing her patent and thereby also reduces the risk of filing an infringement action. For that reason, a "validity-only-if-necessary" approach improves the settlement position of the patent holder, before and during litigation, and encourages the filing of suit based upon less plausible infringement claims. Moreover, as the pre-Federal Circuit courts recognized, failing to resolve the validity issue where raised permits potentially invalid claims to "remain in terrorem of the art"[91] and to serve as a basis for enabling the patent holder to extract license fees, if not monopoly rents. Even if the nonobviousness requirement remained in full force and effect where necessary to decide a case, avoiding the invalidity issue where possible increases individuals' ability to cloak themselves with the protection of a patent, without adversary testing of their patent's obviousness.

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mooted Gaymar's claim of invalidity"). Second, if the district court enters a ruling of non-infringement on a summary judgment motion, while at the same time denying summary judgment motions of invalidity, only the summary judgment of non-infringement may be immediately appealed. If the summary judgment of non-infringement is affirmed, then the case is over as above. If the summary judgment of non-infringement is reversed or vacated, then the denial of the summary judgment motion as to invalidity is a non-final order and is not appealable until after trial. *See* Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1313 (Fed. Cir. 1999) (refusing to review denial of summary judgment motions for invalidity where court vacated summary judgment of non-infringement).

91. Royal Typewriter Co. v. Remington Rand, 168 F.2d 691 (2d Cir. 1948), *cert. denied*, 335 U.S. 825 (1948).

Second, and more fundamentally, the Federal Circuit's adoption of the view that patents are simply property has eviscerated the traditional justification for the nonobviousness requirement. Under the traditional legal and economic view of patents,[92] patents represent a trade-off between expected benefits in the form of increased incentives to invent, to innovate,[93] and to disclose publicly new discoveries as they are made, and expected costs primarily arising from the patent-holder's right to exclude others from making, using, or selling the patented invention.[94] Under the traditional view, both the benefits and the costs arise based on the assumption that a patent can, where the invention is valuable and alternatives are unavailable or difficult to develop, enable the patent holder to charge consumers somewhat more for the patented invention than she could charge in the absence of a patent.[95] On one side, this "market power" and the associated increase in market price provide a source of economic rents that represents the increased incentive to invent, innovate, and disclose. Yet, on the other, this market power represents the primary cost of a patent, as the higher prices will force some consumers to do without, creating the same type of deadweight losses associated with monopolies generally.

As a result, the decision whether to grant any given patent requires a careful balancing of expected benefits and expected costs. Where the expected benefits exceed expected costs, the patent should issue or be enforced, but not otherwise. Ideally, under this view, a patent should be given for an invention only if the invention would not have been

92. For the sake of completeness, I would mention that I am aware of Professor Kitch's "prospect" theory of patents, see Edmund Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977), and Professors Grady and Alexander's rent dissipation theory of patents. *See* Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305 (1992). As I find neither theory normatively persuasive or descriptively useful, I will not refer to them further in this essay.

93. Following the conventions of Merges and others, I will use "invent" to refer to the initial discovery and "innovation" to the commercialization of new technology. *See* Merges, *supra* note 36, at 807.

94. The Court has essentially adopted this traditional view throughout its jurisprudence and is well-represented in cases such as *Graham v. John Deere Co.*, 383 U.S. 1 (1966), *Lear, Inc. v. Adkins*, 395 U.S. 653 (1969), and *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989). For general presentations of the traditional economic view, *see* STUDY OF THE SUBCOMMITTEE ON PATENTS, TRADEMARKS AND COPYRIGHTS OF THE SENATE JUDICIARY COMMITTEE, 85th Cong., 2d Sess., AN ECONOMIC REVIEW OF THE PATENT SYSTEM, Study No. 15, 1–7 (Comm. Print 1958) [*hereinafter* MACHLUP, ECONOMIC REVIEW]; F. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 442, 450 (2d ed. 1980); GEORGE STIGLER, THE ORGANIZATION OF INDUSTRY 123–25 (1968); W. BOWMAN, JR., PATENT AND ANTITRUST LAW 15–32 (1973); Baxter, *supra* note 23.

95. *See, e.g.*, Roberts v. Sears, Roebuck & Co., 723 F.2d 1324, 1345 (7th Cir. 1983) (en banc) (Posner, J. concurring in part and dissenting in part).

developed but for the patent.[96] If the claimed invention would have been developed, commercialized, and disclosed even without a patent, then granting or enforcing a patent would make little sense. The public would receive little additional benefit, yet would have to endure the costs associated with any market power the patent creates. On the other hand, if the claimed invention would not have been developed, commercialized, or disclosed in the absence of an expectation of a patent, then granting and enforcing a patent would make considerably more sense. The public would have to pay somewhat more for the patented invention, but that would be preferable to the alternative of not having the invention at all. From this traditional perspective, "[t]he 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."[97]

In *Bonito Boats, Inc.*, Justice O'Connor called the federal patent system "a carefully crafted bargain" where society seeks to "encourag[e] the creation and disclosure of new, useful, and nonobvious advances in technology and design in return for the exclusive right to practice the invention for a period of years."[98] When we turn to the three prerequisites for a patent from this bargain perspective, novelty and utility play important initial roles in the bargaining process, by ensuring that society is making the bargain with the right person (*i.e.* the first to invent) and is receiving something of value.[99] Once these initials preconditions to the bargain are resolved, however, obviousness determines whether the bargain is desirable; it serves as the "means of weeding out" undeserving inventions. Indeed, under the traditional view, obviousness is defined by this purpose.[100] If the claimed invention contains sufficient technical advance that it would not likely have occurred but for the expectation of a patent, then the invention is nonobvious.[101] If the claimed invention contains so little technical advance that it would likely have

96. *See, e.g., Graham*, 383 U.S. at 11; Martin J. Adelman, *Property Rights Theory and Patent-Antitrust: The Role of Compulsory Licensing*, 52 N.Y.U. L. Rev. 977, 985–87 (1977); Kitch, *supra* note 60, at 301.

97. *Graham*, 383 U.S. at 11.

98. *Bonito Boats, Inc.*, 489 U.S. at 150–51.

99. *See, e.g.*, Merges, *supra* note 36, at 811–12.

100. Although a patent is awarded only after the initial invention has occurred through reduction-to-practice, the decision to pursue the invention is initially and necessarily made before the patent is received. As a result, it is the expectation of receiving a patent (or of a chance to receive a patent) that actually drives the initial decision.

101. *See, e.g.*, Merges, *supra* note 36, at 810 ("Does the system require a level of invention that ensures that all patents will disclose a significant technical advance? I conclude that it does, if the law—most notably the requirement of nonobviousness—is applied correctly.").

occurred without the expectation of a patent, then the invention is obvious. Under the traditional view, then, nonobviousness plays the central role in deciding whether the patent bargain makes sense for any given invention, as the empirical data in Figure 2 for the pre-Federal Circuit periods reflects.

In addition to giving nonobviousness a central role within the patent system, the traditional view also accords nonobviousness a sensible and articulable purpose that courts, commentators, and attorneys can use as a touchstone to guide their analyses. Although this shared view of its purpose did not ensure complete consistency in application of the nonobviousness standard, even among the courts,[102] having a purpose behind the requirement ensured that nonobviousness was not simply a formality, not simply words in the statute devoid of any underlying substance. The purpose also provided a basis for rational discussion of the issue. If a court was imposing too high or too low a standard, an attorney or commentator could attempt to demonstrate that the court was overestimating or underestimating the costs of and/or benefits from the patent bargain and should adjust its standard of obviousness accordingly. Although the court might not accept the argument, there was at least a rational basis for engaging the court on the issue.

In contrast, if one accepts the view that patents are simply property, then the right to exclude others associated with patents is no different from the right to exclude associated with, for example, land.[103] Under this view of patents, the traditional perspective's balancing of costs and benefits breaks down. From a simply-property perspective, the benefits of patents, in the form of increased incentives to invent, to innovate, and to disclose, apparently remain.[104] But the simply-property perspective rejects the notion that patents are monopolies and regards them simply as property rights. While they "like other property rights, may be *used* in a scheme violative of antitrust laws,"[105] "patent rights

102. While the pre-Federal Circuit courts generally accepted the traditional view of the categories of costs and benefits created by patents, as it turned out, they had quite divergent views of the precise extent of those costs and benefits as an empirical matter. As a result, some courts required somewhat more of an advance, while others required somewhat less, before they perceived the bargain as sensible. *See* Baum, *supra* note 34, at 762 (noting wide variation between the circuits in percentage of patents upheld as valid).

103. *See* Carl Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 786 n.3 (Fed. Cir. 1983).

104. This appearance may prove misleading. From the traditional view, a patent can generate no additional economic incentives absent market power and its associated deadweight losses. As a result, if the assumption that a patent is simply property and hence generates no market power is, in fact, true, then the patent will also not generate any economic incentives to invent, innovate, or disclose. As we shall see, proponents of the simply-property perspective would simply re-characterize these rents as proper scarcity rents. *See infra* text accompanying notes 128–135.

105. *Carl Schenck, A.G.*, 713 F.2d at 786 n.3 (emphasis in original).

are not *legal monopolies* in the antitrust sense of the word."[106] Because the costs of the patent system under the traditional view are a function of the presumed monopoly character of a patent, these costs are fundamentally inconsistent with a simply-property view of patents. As a result, these costs are not considered (and do not really exist) under a simply-property framework. Once these monopoly costs are eliminated from the cost-benefit balance, the costs of the patent system and of any given patent are vastly reduced. Without the deadweight losses from a presumed monopoly, the costs associated with the patent system would include only the transaction costs involved in establishing and administering the system or, in a particular case, the marginal administrative expense associated with the patent at issue. Under such a perspective, the cost-benefit balance shifts sharply in favor of granting patents.

Moreover, once the monopoly costs are removed from the equation, the preoccupation with a means for identifying those inventions worth the "embarrassment of an exclusive patent," found under the traditional view, disappears, taking with it the central justification for the nonobviousness requirement. If patents are not monopolies and do not generate monopoly-like deadweight losses, they are not an "embarrassment"[107] and there seems no longer any reason to restrict them to cases where the invention would not have occurred but for the expectation of a patent.[108] As a result, the need for some means to "weed out" undeserving inventions seems largely to disappear, leaving an individual who creates something new and useful presumptively entitled to a property right reflecting her contribution. Viewed in this way, the simply-property perspective cuts nonobviousness from its traditional mooring and leaves it adrift; the words in the statute remain, but they lack any clear direction.

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106. American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1367 (Fed. Cir. 1984).

107. Thomas Jefferson's language referring to the "embarrassment of an exclusive patent" has been cited only twice in Federal Circuit opinions, and in both instances, by a dissenting judge. *See* King Instruments Corp. v. Perego, 65 F.3d 941, 960 (Fed. Cir. 1995) (Nies, J., concurring in part and dissenting in part); *see also In re* Alappat, 33 F.3d 1526, 1553 n.26 (Fed. Cir. 1994) (en banc) (Archer, C.J., concurring in part and dissenting in part).

108. One might argue that if patents are granted on every trifling advance, then to introduce any modern product might require licenses from any number of patent-holders, each with a claim to some small piece of the product, and the resulting transaction costs might prove, on balance, more harmful than any benefit derived from the grant of the patents. Because I plan to require some significant advance before a patent may be granted and because of space limitations, I will not explore this argument further. But I wanted to note its availability as a back-up to the argument I present in the text.

3. The Simply-Property Perspective as Descriptive Tool

Putting to one side its normative merits, I believe that thinking of patents as simply property has considerable power as a positive or descriptive tool to explain the changes the Federal Circuit has made in obviousness practice.[109] Certainly, the far less central role to which the simply-property perspective relegates obviousness is consistent with the particular disfavor in which obviousness has fallen under the Federal Circuit.

In addition, the simply-property perspective predicts the Federal Circuit's doctrinal changes in the obviousness inquiry far better than the traditional perspective. As Professor Kitch and Professor Merges have pointed out, the Federal Circuit's elevation of secondary considerations to a fourth *Graham* factor and the Federal Circuit's particular emphasis on commercial success cannot easily be reconciled with the traditional perspective's understanding of the nonobviousness requirement.[110] Either because of the long inferential chain between commercial success and true technical advance, as Professor Kitch has explained, or because of imperfect information, variety in innovation strategies, and the central role of marketing, in Professor Merge's view, commercial success provides little support for the proposition that a claimed invention represents the sort of technical advance that would "warrant the embarrassment of a patent."[111] This elevation is therefore inconsistent with the traditional perspective's cost-benefit balance and the resulting role the traditional perspective assigns the nonobviousness requirement. Yet, even if commercial success does not establish that the level of technical advance present is sufficient to warrant a patent under the traditional view, it does tend to prove that at least some advance has occurred.[112] Social value and innovation rent thus move together as a general matter. As a result, an emphasis on commercial success better fits obviousness's more limited role under the simply-property perspective. Commercial success alone tends to establish that the patent-holder has given us something both new and useful, and is therefore

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109. I also believe that the simply-property perspective better predicts the Federal Circuit's narrowing of infringement standards, but a full discussion of that issue is beyond the scope of this essay.

110. *See* Kitch, *supra* note 60, at 332; Merges, *supra* note 36, at 839, 842–52.

111. *See* Kitch, *supra* note 60, at 332; Merges, *supra* note 36, at 839, 842–52.

112. Even here, the inferential chain is not perfect. New packaging, better quality control, better trained employees and a host of other factors may lead to the commercial success of a "new" entrant, even without any technical advance in the product offered or the method of producing it. *See, e.g.*, R.G. Cooper & E.J. Kleinschmidt, *New Products: What Separates Winners from Losers?*, 4 J. PROD. INNOV. MGMT. 169, 182 (1987).

presumptively entitled under the simply-property perspective to a property right reflecting her contribution.

Similarly, in dealing with combination patents, if we are looking for a test that better determines whether a new combination of prior art elements entails some significant level of technical advance, the synergism test appears better suited to that role than the suggestion test.[113] By requiring some unusual or unexpected result, the synergism test better identifies those combinations of prior art elements that would not likely have been discovered but for the inducement of a patent.[114] On the other hand, if we are looking for a test that ensures only that the claimed combination of prior art elements was not already present in the prior art, the suggestion test appears better suited to that role than the synergism test. That the prior art did not suggest combining the elements may not establish that developing the combination was an arduous or tricky task, but it does tend to prove that the combination was, in fact, new. Again, this seems to fit with the simply-property view that so long as the individual has contributed something new (and otherwise useful), she is presumptively entitled to a property right reflecting her contribution.

Aside from more accurately predicting the doctrinal changes the Federal Circuit has adopted, the advent of the simply-property perspective may also help us understand why the nonobviousness issue continues to prove troublesome for the court. This continuing difficulty in applying the nonobviousness doctrine to particular cases is somewhat surprising. Given the general disfavor in which obviousness has fallen, as well as the vesting of intermediate appellate jurisdiction with a single court, I expected to find more uniformity in the Federal Circuit decisions than was present in the pre-Federal Circuit era.[115] Yet, beyond

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113. *See, e.g.*, Rhodes, *supra* note 45, at 1080–82.

114. *Compare* Dreyfuss, *supra* note 69, at 15–16 (arguing that "suggestion" test better reflects the "imperatives of invention").

115. The legislative history of the Federal Courts Improvement Act indicates that increased uniformity and reduced uncertainty was a principal justification for the creation of the Federal Circuit. *See, e.g.*, Dreyfuss, supra note 69, at 7–14 (noting concern for precision); Lever, *The New Court of Appeals for the Federal Circuit (Part I)*, 64 J. PAT. OFF. SOC'Y 178, 186-200 (1982); Merges, *supra* note 36, at 821. As one witness testified during the hearings leading to the creation of the Federal Circuit:

> Patents, in my judgment, are a stimulus to the innovative process, which includes not only investment in research and development but also a far greater investment in facilities for producing and distributing goods. Certainly, it is important to those who must make these investment decisions that we decrease unnecessary uncertainties in the patent system.

The Federal Court Improvements Act of 1981, S. Rep. 275, 97th Cong., 1st Sess. 6 (1981) (statement of Harry F. Manbeck, Jr., General Patent Counsel for General Electric Corp.).

obviousness's general disfavor and a common doctrinal approach, consistency in the resolution of obviousness cases continues to elude the Federal Circuit. Although the Federal Circuit has elevated the secondary considerations to a central role in the obviousness inquiry, sometimes a strong showing of secondary considerations will be sufficient to overcome a conclusion of obviousness based upon the three *Graham* factors;[116] sometimes it will not.[117] Similarly, in dealing with so-called combination patents, the Federal Circuit will, at times, enforce the suggestion requirement strictly.[118] Yet in other cases, the suggestion requirement proves far less strict.[119] As a result, the border between

116. *See, e.g.*, ATD Corp. v. Lydall, Inc., 159 F.3d 534, 546 (Fed. Cir. 1998) (reversing jury's conclusion of obviousness based on court's perception of unsolved need and commercial success); Arkie Lures, Inc. v. Gene Larew Tackle, Inc., 119 F.3d 953, 957–58 (Fed. Cir. 1997) (reversing by 2–1 vote trial court's ruling of obviousness based upon court's perception of commercial success and skepticism); Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1570–80 (Fed. Cir. 1997) (reversing trial court's ruling of obviousness based on court's perception of commercial success, alleged infringer's touting the advance, and long-felt but unsolved need).

117. *See* Riverwood Int'l Corp. v. Mead Corp., 212 F.3d 1365, 1367 (Fed. Cir. 2000) (reversing trial court's ruling that patent was nonobvious on grounds that "the objective factors did not carry sufficient weight to override a conclusion of obviousness"); Richardson-Vicks, Inc. v. Upjohn Co., 122 F.3d 1476, 1481–83 (Fed. Cir. 1998) (affirming ruling that patent claims were obvious despite commercial success and presence of other objective factors); *see also* Merges, *supra* note 36, at 825, 831 (comparing *Windsurfing Int'l, Inc. v. AMF, Inc.*, 782 F.2d 995 (Fed. Cir. 1986), with *Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309 (Fed. Cir. 1985) to illustrate similar inconsistency).

118. *See, e.g.*, Georgia-Pacific Corp. v. United States Gypsum Corp., 195 F.3d 1322, 1330 (Fed. Cir. 1999) (affirming judgment of nonobviousness where there was no express suggestion in the prior art references); Robotic Vision Sys., Inc. v. View Eng'g, Inc., 189 F.3d 1370, 1377 (Fed. Cir. 1999) (holding that absence of teaching in the prior art forecloses obviousness); Smith Indus. Medical Sys., Inc. v. Vital Signs, Inc., 183 F.3d 1347, 1356–57 (Fed. Cir. 1999) (reversing trial court's conclusion of obviousness based on absence of teaching or suggestion to combine elements); ATD Corp. v. Lydall, Inc., 159 F.3d 534, 546 (Fed. Cir. 1998) (reversing jury's conclusion of obviousness based on absence of teaching or suggestion to combine elements); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352 (Fed. Cir. 1998) (same); The Beachcombers v. Wildewood Creative Prods., 31 F.3d 1154, 1160–63 (Fed. Cir. 1994) (reversing judgment of obviousness based upon jury findings where Federal Circuit found no evidence that the prior art "discloses or suggests" the combination of elements claimed).

119. *See, e.g.*, *Riverwood Int'l Corp.*, 212 F.3d at 1366–67 (reversing district court and holding patent obvious where elements were present in prior art and possibility of substitution was within knowledge of person with ordinary skill in the art despite absence of express teaching to substitute); *In re* Gartside, 203 F.3d 1305, 1320–21 (Fed. Cir. 2000) (affirming obviousness rejection where, despite absence of express teaching or suggestion, there was a "trend in the art" towards the patent claims at issue); Valmet Paper Mach., Inc. v. Beloit Corp., 105 F.3d 1409, 1413–14 (Fed. Cir. 1997) (reversing district court's ruling of nonobviousness and ruling patent obvious despite absence of express teaching to combine elements); Para-Ordinance Mfg. v. SGS Importers Int'l, 73 F.3d 1085, 1090–91 (Fed. Cir. 1995) (affirming by a 2–1 vote judgment of obviousness based upon jury verdict despite absence of specific suggestion to combine prior art elements, despite improper introduction

obvious advances and nonobvious inventions remains more a large gray area than a bright-line. Although some cases are easy to predict under the Federal Circuit, just as other cases were easy to predict in the pre-Federal Circuit era, predicting the resolution of the obviousness issue for most cases remains a task as fraught with difficulty today as it was before the Federal Circuit.[120]

I believe this continuing uncertainty over proper application of the nonobviousness requirement to particular cases stems from the fact that the simply-property perspective appears to eliminate the nonobviousness doctrine's central justification, as traditionally understood. While we can reshape the nonobviousness doctrine to fit the simply-property perspective by re-creating it as a check to ensure that a patent is not removing knowledge or materials already in the public domain, the novelty requirement already addresses this issue. In addition, the statutory language in section 103 seems to emphasize something more than novelty. Section 103 expressly bars patents for inventions even where they are "not identically disclosed" in the prior art.[121] The statutory language thus seems expressly to contemplate that nonobviousness requires something more than mere novelty. The invention must not only be different from the prior art (i.e. new), but the difference must be such that "the subject matter as a whole" was not "obvious at the time the invention was made."[122]

Yet, under the simply-property perspective, there seems to be no policy justification for imposing such a requirement beyond novelty. As a result, for those on the Federal Circuit who have fully accepted the simply-property perspective, section 103 sets forth words on a page, but they are words that lack any sensible purpose or direction. Given the lack of any underlying purpose for the requirement, these judges must determine what the words mean as words alone—an approach difficult at any time for those trained in the realist tradition, but made particularly so here by the central use of the unhelpful word "obvious." Without a purpose for the statutory requirement and without language in the statute that is capable of defining itself, each judge must necessarily decide for herself the level of technical advance required to satisfy the statute.[123] The net result has been uncertainty and confusion. Some judges have retreated to a view of nonobviousness as a "novelty-plus"

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of hindsight-based defense exhibit, and despite evidence of commercial success, failure of others, exact copying, and teaching away from the combination in the prior art).

120. *See, e.g.*, Harris, *supra* note 38, at 76.

121. 35 U.S.C. § 103(a) (Supp. 2000).

122. *Id.*

123. *See* Harris, *supra* note 38, at 76 (critiquing the suggestion test as being subjective and thereby "introduc[ing] a major element of unpredictability as to patent validity").

requirement that checks the invention for novelty against the prior art as a whole, rather than against prior art references individually; others seem determined to require some level of technical advance, but are unable to articulate a justification for defining any given level as the right level. Beyond these immediate difficulties, the absence of any underlying policy justification for the requirement precludes a rational basis (aside from the word "obvious" itself and the surrounding statutory language) even to argue for, let alone decide, what level of advance should suffice to render an invention nonobvious.

All of this is compounded by the long shadow of the traditional perspective. Years of jurisprudence based upon the traditional perspective are unlikely to disappear without a trace, particularly where the Court has so far refused to repudiate its own longstanding jurisprudence reflecting that perspective. Even some members of the Federal Circuit may retain some continuing commitment to the traditional perspective. Yet, these two perspectives appear fundamentally incompatible. Where one sees monopoly, the other sees property. This dichotomy makes dialogue between proponents of these two views difficult, at the very least. Judge Posner, for example, when confronted with the view that patents are simply property and not monopoly responded:

> A patent enables its owner to monopolize the production of things in which the patented idea is embodied. To deny that patent protection has this effect, the position that a footnote in the majority opinion attributes to the chief judge of the new patent appeals court, is—with all due respect—to bury one's head in the sand.[124]

Although no doubt heartfelt, Judge Posner's words are unlikely to persuade adherents of the simply-property perspective to abandon their views nor do they help establish a basis for further discussion. Yet, unless the Federal Circuit can be persuaded to abandon the simply-property perspective and return to the traditional perspective's fold, moving forward on the obviousness issue requires identifying some common ground between these two perspectives. If we find none, then it is simply a question of which perspective will prevail and we can resort to Judge Posner's approach. However, I believe that the two perspectives share more than initially appears and that a workable

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124. Roberts v. Sears, Roebuck & Co., 723 F.2d 1324, 1345 (7th Cir. 1983) (en banc) (Posner, J., concurring in part and dissenting in part). In the footnote to which Judge Posner refers, the majority cites then-Chief Judge Markey for his statements that "a patent is not to be equated with a monopoly" and the patent's right to exclude others is "'but a pseudonym for "property."'" *Id.* at 1329 n.5 (*quoting* Chief Judge Howard T. Markey, *Why Not the Statute?*, Address at University of Chicago Law School (April 26, 1983)).

reconciliation can be achieved. I begin this somewhat daunting task by examining the simply-property perspective's normative merits.

II. THE NORMATIVE MERITS OF THE SIMPLY-PROPERTY PERSPECTIVE

In turning to the normative merits of the simply-property perspective, proponents of the simply-property perspective are met immediately with Judge Posner's challenge that changing the names we attach to a patent cannot change its real-world economic consequences. If a patent excludes others from making, using, or selling the patented invention, and thereby enables the patent-holder to charge more for the invention than would otherwise be the case, those higher prices will generate the same economic consequences as any other monopoly. Specifically, some consumers will be unable to afford the higher "with patent" price who could have afforded a lower "no patent" price. Whatever name you attach, the welfare loss associated with these disappointed consumers is a real economic consequence and a direct result of the patent.

If you find this response completely persuasive and are tempted to ignore the simply-property perspective for that reason, I would urge you to reconsider. Although Shakespeare's Juliet espoused the view that names should not matter, she quickly learned that names matter a great deal. Names carry with them an array of associations, assumptions, and prejudices that can strongly influence our perception of the thing named. In the legal world, the name "property" with its Blackstonian visions of "that sole and despotic dominion"[125] carries powerful, generally positive connotations that can strongly influence even a wary mind, while the word "monopoly" conjures opposing, generally negative images.[126] Given the power of names, what we call a patent, whether property or monopoly, matters very much.[127]

Moreover, the simply-property perspective has an answer to the "deadweight loss by any other name" argument. A proponent of the simply-property perspective could point out that the high prices associated with certain patented inventions are no different from the high

125. 2 WILLIAM BLACKSTONE, COMMENTARIES section 2.

126. *See In re* Kaplan, 789 F.2d 1574, 1578 n.3 (Fed. Cir. 1986) ("Because of its antitrust connotations and association with illegality in connection therewith, [the term 'monopoly'] often evokes negative reactions inappropriate to a dispassionate analysis of patent law.").

127. *See* Glynn S. Lunney, Jr., *Trademark Monopolies*, 48 EMORY L.J. 367, 369–72, 417–20 (1999) [hereinafter Lunney, *Trademark Monopolies*] (recounting similar property-monopoly debate over proper label for trademark protection and recounting substantial expansion of trademark law as property label became preferred).

prices associated with certain parcels of land.[128] That some land prices are high does not convert land ownership into a monopoly or establish a basis for characterizing the inability of some consumers to afford certain parcels as a deadweight loss.[129]

In response, a proponent of the traditional view would assert that land and inventions are materially different. Land, the traditionalist could assert, is a private good, characterized by rivalrous consumption.[130] On the other hand, the ideas, information, and concepts reflected in the invention are a public good (or would be but for the patent), and as such are characterized by non-rivalrous consumption.[131] Putting the jargon to one side, there is only so much land, and whether we legally assign ownership of a parcel to one person or to another or to no one at

128. Such a proponent could also point out that traditionalists are not always consistent in how they define competition and how they define monopoly. Neither perfect competition (where perfect substitutes exist) nor perfect monopoly (where no substitutes exist) are commonly found outside of economic theory. Virtually all markets contain some degree of competition and some degree of monopoly, and economists have developed a variety of names to describe particular cases, such as imperfect competition, monopolistic competition, and product differentiation. However, they often disagree as to which name is appropriate for particular situations and as to the efficiency consequences of the names.

129. *But see* Lunney, *Trademark Monopolies*, *supra* note 127, at 370 n.19 (describing concentration of land ownership in Hawaii that has been recognized by the Hawaii legislature as creating undesirable, monopoly-like consequences).

130. This probably overstates the case. Many individuals can often use the same parcel of land without creating conflicts with other users. To the extent that land use is non-rivalrous, this may justify exceptions to the private ownership regime for some such non-rivalrous uses. *See generally* Pruneyard Shopping Center v. Robins, 447 U.S. 74 (1980) (considering and rejecting various federal constitutional arguments challenging California Supreme Court's interpretation of the California Constitution to permit speech related to public concerns at privately-owned shopping mall).

131. Public goods analysis as such began with Professor Samuelson's 1954 article, *The Pure Theory of Public Expenditure*. Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REV. OF ECON. & STAT. 387 (1954). Although his analysis focused principally on explaining and justifying government expenditure on, and provision, of certain goods, *id.* at 387–88, in his later articles, Professor Samuelson used "concerts" as an example of the type of good to which his analysis might apply. *See* Paul A. Samuelson, *Aspects of Public Expenditure Theories*, 40 REV. OF ECON. & STAT. 332, 335 (1958); Paul A. Samuelson, *Diagrammatic Exposition of a Theory of Public Expenditure*, 37 REV. OF ECON. & STAT. 350, 356 (1955). Professor Kenneth J. Arrow first applied a public good analysis directly to intellectual property issues. *See* Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY 609, 616–19 (U. Princeton, 1962). Professor Samuelson used the term collective consumption goods in his initial work. Professor Demsetz subsequently proposed a distinction between "public goods," which are characterized by nonrivalrous consumption and an ability to exclude non-payers from access to the good, and "collective goods," which are characterized by nonrivalrous consumption and an inability to exclude non-payers. *See* Harold Demsetz, *The Private Production of Public Goods*, 13 J.L. & ECON. 293, 295 (1970). Although Professor Samuelson arguably incorporated both conditions, nonrivalrous consumption and non-excludability, in his initial work, Professor Demsetz's "public good" label has become the standard for a good exhibiting these two characteristics.

all, the amount of land present remains unchanged.[132] In contrast, once an invention has been made and disclosed, assigning the right to exclude others from making, using, or selling the invention to one person will reduce the invention's available supply. But for the patent, others would take the information disclosed as a result of marketing the invention and use it to create their own competing products, thereby increasing the available supply. As a result, assigning a right to exclude with respect to land does not create the scarcity of land; it merely *recognizes the physical scarcity* that already exists.[133] In contrast, assigning a right to exclude with respect to an invention *imposes a legal scarcity* where physical scarcity would not otherwise exist.[134]

To counter this argument, a proponent of the simply-property perspective could admit that the invention once created is not physically scarce, but insist that the talent, skill, and resources needed to create and develop the invention in the first place are. Because these creative resources are not sold directly, but are invested in the invention, imposing legal scarcity on the invention is an indirect, but effective means for creating a private market pricing mechanism for the creative resources themselves. As these creative resources are physically scarce, using a property right to enable private market pricing for them has the same consequences and normative desirability as a private market system for land and other tangible things. The patent system is not therefore creating an arbitrary and artificial scarcity (*i.e.* monopoly), but creating a legal scarcity that serves as a pricing proxy for the physically scarce creativity reflected in the invention (*i.e.* property).

A traditionalist would likely have to admit that this point has some merit, as it essentially parallels the "incentive" justification for patents found in the traditional perspective. But the traditionalist would nonetheless insist that the public good nature of invention justifies a special property regime for inventions where the benefits from such a pricing

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132. Assigning exclusive ownership may increase the value and utility of the land by reducing transaction costs, *see, e.g.*, Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 354–59 (Papers & Proc. 1967), but that is a separate issue.

133. The statement that land is scarce is, of course, a reflection of the current situation in metropolitan areas of our country. At times in our history, undeveloped land has been plentiful in the sense that the supply of it so far exceeded the demand that it had little or no value. *Cf.* Pierson v. Post, 3 Cai. R. 175, 175 (N.Y. Sup. Ct. 1805) ("The declaration stated that Post, being in possession of certain dogs and hounds under his command, did, 'upon a certain wild and uninhabited, unpossessed and waste land, called the beach, start one of those noxious beasts called a fox' . . . .").

134. *See* Richard A. Posner, *Natural Monopoly and its Regulation*, 21 STAN. L. REV. 548, 562–63 (1969) ("The conventional reply to a comparison of monopoly to other rents is that monopoly rents are the result of an artificial, contrived scarcity, rather than a natural scarcity . . . .").

system are balanced against the deadweight losses it creates. As this is the point where the traditionalist started, if the argument continues at all, the circle of arguments will simply begin again. There are branches and permutations available for each of these arguments, but in the end, each perspective is self-contained, offering all of the answers that its adherents believe they need. As a result, the two perspectives appear to have little in common and no basis for mediating their differences.

I believe, however, that these two perspectives share substantial common ground and can be reconciled. The key, I believe, lies in understanding the basis for the presumed normative desirability of property generally. In a legal sense, any set of legal rights between an individual and others pertaining to a thing is "property."[135] Thus, a patent issued under a legal regime where nonobviousness requires only a trivial advance over the prior art is property, just as a patent issued under a legal regime where nonobviousness requires a substantial advance over the prior art is also property. If the right to exclude is "the essence of property," then the royal "patents" of the sixteenth and seventeenth centuries granting favored courtiers the exclusive right to import, export, or sell particular goods were property. Additionally, if the government were to enact a law stating that only Microsoft could sell operating software for PC-compatible computers in interstate commerce,[136] Microsoft's rights under that law would be property as well. While all of these examples constitute property, not all of them are normatively desirable. Property is a powerful concept in our society because private ownership of resources has generally proven a useful and desirable institution. The implicit assumption in the simply-property perspective is that a patent is normatively desirable because it is sufficiently similar to other forms of property to claim, by analogy, their desirability. Yet the mere fact that some property has proven desirable does not mean that all legal rights that might qualify as property are desirable.[137]

Before deeming such legal rights desirable, we must ensure that the proposed property regime at issue advances some socially desired objective. From an economic perspective, the goal of a property regime is

135. *See* RESTATEMENT (FIRST) OF PROPERTY ch. 1, introductory note (1936).

136. If the example seems far-fetched, keep in mind that that is the effective result of Microsoft's copyright on its operating system given the dominating nature of the network effects in the operating system software market.

137. The last example should also remind us that property and monopoly are not opposites, as so many seem to assume. Property may sometimes be traded in a market where competing substitutes are available, and in that case, we would have property and competition. In other cases, property may be traded in markets where no competing substitutes are available, and in those cases, we would have property and monopoly. *See also* Lunney, *Reexamining Copyright*, *supra* note 87, at 518 n.143; Lunney, *Trademark Monopolies*, *supra* note 127, at 370 n.19.

to ensure the allocation of resources to their highest value use. Private ownership of tangible things has proven to serve this goal reasonably well, as a general matter. For the patent system to lay justifiable claim to property's normative appeal, patents must tend, as property more generally does, to promote the efficient allocation of scarce resources to their highest value use. As suggested above, creativity is the scarce resource we are trying to allocate through the patent system. The question becomes how do we define the nonobviousness standard within the context of the patent system to help ensure that patents lead individuals to allocate their creativity to its highest value use.

A. *Paying for Creativity: Innovation Rents*

The basic economic principles governing the allocation of resources under conditions of private ownership are reasonably well known.[138] In economic theory, private ownership leads to the optimal allocation of resources only where all property is traded in perfectly competitive markets with all costs and benefits fully internalized (the "perfect competition model").[139] Under these conditions, resources will be allocated to various markets until each market reaches equilibrium at that point where price, marginal cost, and marginal utility for the last unit of production are all equal. Despite reaching equilibrium at this seemingly optimal point, the perfect competition model necessarily eliminates any incentive for innovation. Under conditions of perfect competition, as soon as a new product is introduced, competitors instantly introduce perfect substitutes, price falls to marginal cost, and the innovator has no opportunity to recover anything for the creativity she invested in the new product. As a result, under conditions of perfect competition, patents, copyrights or some other form of legal protection would be strictly necessary for any non-gratuitous innovation to occur.[140]

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138. Much of the following tracks a similar model that I have used to analyze the proper scope of copyright protection. *See* Lunney, *Reexamining Copyright*, *supra* note 87, at 582–89. In this analysis, I will assume that: (1) individuals will dedicate available resources to those uses that they expect will bring the highest private return for those resources; (2) uncertainty is not present, so that an individual's expectations as to potential returns are in fact accurate; and (3) price discrimination is not possible. *See id.* at 582–83.

139. *See, e.g.*, JOAN ROBINSON, THE ECONOMICS OF IMPERFECT COMPETITION 95, 317 (1933); R.G. Lipsey & Kelvin Lancaster, *The General Theory of the Second Best*, 23 REV. ECON. STUD. 11, 16–17 (1956).

140. *See, e.g.*, SCHERER, *supra* note 94, at 444 ("If pure and perfect competition in the strictest sense prevailed continuously . . . incentives for invention and innovation would be fatally defective without a patent system or some equivalent substitute.").

Fortunately for innovation, perfect competition is rarely found outside of economic theory.[141] In the real world, there is almost always some time between an innovator's introduction of a new product and the offering of competing substitutes by others. During this lead-time period, if consumers perceive the new product as desirably different[142] from existing products, the innovator will have the opportunity to charge a price for her new product somewhat more than her marginal cost.[143] The availability of this economic rent provides the innovator some opportunity to obtain payment for the creativity she invested in the new product.[144]

Sooner or later, however, this lead-time period will end. It may end when others notice the innovator's rents and seek a share of those rents by introducing competing products ("copying competitors"). Alternatively, the lead-time period may end when another, acting completely independently of the original innovator, happens upon the same new product and brings it to market simultaneously with or soon after the

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141. *See, e.g.*, EDWARD CHAMBERLIN, THE THEORY OF MONOPOLISTIC COMPETITION 214–15 (1933) (noting that pure competition "may no longer be regarded as in any sense an 'ideal' for purposes of welfare economics" and that "[i]n many cases it would be quite impossible to establish it"); EDWARD CHAMBERLIN, TOWARD A MORE GENERAL THEORY OF VALUE 93 (1957) ("pure [e.g. perfect] competition is evidently a theoretical concept, and . . . the practical-minded economist is often ready enough to point out that 'no one has ever advocated that it be established' "); PAUL SAMUELSON, ECONOMICS 39, 43–44 (6th ed. 1964) ("A cynic might say of perfect competition what Bernard Shaw said of Christianity: 'The only trouble with it is that it has never been tried.' . . . All economic life is a blend of competitive and monopoly elements. . . . It would be humanly impossible, therefore, to attempt to create *perfect* competition by law."); SCHERER, *supra* note 94, at 24. A few markets, such as grain farming, are thought to come close. *See* SAMUELSON, at 43 (noting that "imperfect competition" is the rule, "except possibly [for] the millions of farmers who individually produce a negligible fraction of the total crop"); ROBERT HANEY SCOTT & NIC NIGRO, PRINCIPLES OF ECONOMICS 178–79 (1982) ("Perfect competition does not exist in the real world, although several major industries approximate it surprisingly well. Among them are farming . . . .").

142. From an economics perspective, if consumers do not prefer the new product to existing products or the new product is not less expensive to create than what it replaces, then it has no social value. Moreover, if the invention does not provide some financial advantage compared to existing goods or methods of production, the grant or denial of a patent will not affect its value.

143. *See, e.g.*, Lunney, *Reexamining Copyright*, *supra* note 87, at 582–85.

144. If our investor devoted her resources entirely to some non-creative endeavor, she would likely face immediate and near-perfect competition, and would therefore not earn any innovation rents. At the same time, as long as she was not unusually inefficient, her competitors could not obtain any copying advantage, but would have to do their own work. For such a non-creative endeavor, our investor would not have the prospect of earning an unusually high return through innovation rents, but neither would she face the prospect of losing her investment as a result of copying competitors or another's simultaneous invention. In contrast, an investment that involves creativity offers both the opportunity of unusual profit if the innovation rents prove substantial and the risk of losing money if the innovation rents prove insufficient to cover the product's costs.

first innovator ("simultaneous invention"). In either case, these competing products are likely to duplicate the appeal of the innovator's new product more closely than preexisting goods. These goods are also likely to carry a lower price than the original.[145] Their introduction will likely therefore reduce the price that the innovator can profitably charge and the associated rents she may earn for her no-longer new product.[146] Indeed, if consumers perceive these competing products as perfect substitutes for the original, then prices in the new product market will fall to marginal cost and no further innovation rents will be available. Empirical studies have shown, however, that the innovator typically retains some ability to price above marginal cost and to earn corresponding rents even after competitive entry occurs.[147] But our innovator will likely find that the entry of these new competitors will reduce the extent of the rents available in the post-entry period.[148]

The combination of rents earned by an innovator in the lead-time and post-entry periods represents payment for the creativity invested in the new product. Moreover, these "innovation rents" will accrue even in the absence of a patent or some other form of "intellectual" property. The amount of innovation rents available, or expected to be available, in any given case is an empirical question that will vary from case to case and from industry to industry. But, as a general rule, the amount of in-

145. Economic theory predicts three possible price levels at which the market may settle following competitive entry. First, prices may remain at the price set by the innovator, if competitors follow the pricing lead of the innovator and seek market share through non-price competition. Second, prices may fall to the level necessary for the competitors to recover their own creativity investments. Third, prices may fall to marginal cost. Economists typically assume that prices will fall following competitive entry, particularly in the case of copying competitors. *See also infra* text accompanying notes 153–154. In the end, what effect entry will have on market price and market share is an empirical issue – which is an economist's way of saying she has no clue, but will be happy to give you her opinion. What empirical evidence there is suggests that the first result will usually occur only where the innovator is the single dominant firm in the industry and the competitive entry comes from a number of much smaller firms. The empirical evidence also suggests that the third pricing possibility becomes increasingly likely as the number of market entrants of similar size increases.

146. In this "post-entry" period, the introduction of these competing products offers consumers a choice. If the innovator tries to maintain her original price, consumers can switch to one of the lower priced, competing products now available.

147. *See generally* Richard Schmalensee, *Product Differentiation Advantages of Pioneering Brands*, 72 AM. ECON. REV. 349 (1982).

148. Moreover, advertising and other methods of product differentiation may enable an individual to earn rents even without innovation, simply by differentiating an existing product. Efforts at product differentiation may prove easier or more successful when they build on an innovative product, but in determining rents attributable to the innovation, we should be careful to limit rents from this post-entry period to those additional rents earned because of innovation and exclude those rents that could have been earned even in the absence of innovation.

novation rents available will turn on: (1) the social value of the invention;[149] (2) the extent of the lead-time period available; (3) the extent of the cost savings competitors can obtain by copying (the "copying advantage"); (4) the extent to which the innovator can differentiate her product in the post-entry period; and (5) the presence of any natural or network monopoly characteristics in the new product's market.

The social value of the invention and the innovation rents available tend to rise and fall together because both are functions of: (i) the demand for the new product (*i.e.* increased quantities sold), and (ii) the extent to which consumers will pay more for the new product than its marginal cost (*i.e.* increased per unit rent).[150] If we measure social value as a function of consumers' willingness to pay, then an increased demand for a new product or an increased willingness to pay a higher per unit rent would reflect increased social value. Similarly, because total innovation rents are the product of the quantity sold and the rent earned per unit, increased demand and increased per unit rent also increase the innovation rents available from a new product. On the other hand, as these two factors or either of them decrease, both the social value and the innovation rents associated with the new product will tend to decrease. As a result, a new product with higher social value will tend to generate higher innovation rents than a new product with lower social value, *ceteris paribus.*

The length of the lead-time period will also affect the innovation rents associated with a new product. With a longer lead-time period, an innovator will make more of her sales during the lead-time period, when her price is likely higher, and will likely make more sales overall, as she will have the market to herself longer before she must share it with new entrants. With a shorter lead-time period, the opposite is true. A shorter lead-time period may also reduce the extent to which the innovator can

149. I am using the traditional economic definition for social value where social value equals the area under the demand curve for the product less the product's costs.

150. *See* Lunney, *Reexamining Copyright, supra* note 87, at 556–57, 559 & n.283. I am assuming that the innovation is for a new product. If the innovation is a new method, either more efficient or less expensive, to produce an existing good, then the same lead-time rents will accrue. In this case, the rents will accrue, because while the market price for the good will presumably remain the same (unless the innovator is the marginal producer of the good), the innovator's marginal cost for producing the good will decrease. However, where the rents available to the creator of a new product represent only a fraction of the social value associated with the innovation, the "cost-saving" rents associated with the new method will often encompass the entire social value of the innovation. A new method for producing an existing product may also be more difficult for competitors to copy as the new method may not be discoverable by reverse engineering of its end product. *See, e.g.*, Richard C. Levin et al., *Appropriating Returns from Industrial Research and Development*, 3 BROOKINGS PAPERS ON ECON. ACTIVITY 783, 794–95 (1987) (presenting survey results that revealed belief that patents were much less effective among available protections for processes).

charge a price above marginal cost in the lead-time period because, as the lead-time period becomes shorter, some consumers who would otherwise have purchased during the lead-time period may decide to wait for the lower prices of the post-entry period.[151] Although the actual or expected lead-time period for any given invention will depend upon the particular circumstances presented, we can identify three considerations that will usually dictate the likely duration of the lead-time period. First, as a field becomes more crowded with others pursuing similar lines of research, and second, as the social value of the invention increases, we should expect a shorter lead-time period. Both factors suggest that others are more likely to be actively looking to solve the same problem as our innovator. Both therefore increase the risk that someone else will happen on the same solution at about the same time, or that another will quickly identify and begin copying our innovator's solution when it appears on the market. Third, as our innovator's new product becomes more easily copied, we should expect a shorter lead-time period. Greater ease of copying usually means that it will take less time for another to copy the new product and introduce their own competing products.[152]

The copying advantage affects the innovation rents available because it plays a key role in determining the likely price for the new product in the post-entry period. Although copying competitors do not usually invest as much creativity to copy as the innovator did to innovate, even copying often entails some creative investment.[153] Copying competitors will likely try to set a price for their products that will enable them to recover their own, albeit somewhat smaller, creative investments.[154] They will therefore try to set a price somewhat above their marginal cost. As their copying advantage increases, these com-

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151. *See* Lunney, *Reexamining Copyright*, *supra* note 87, at 589 & n. 377.

152. Even if a car and a computer program entail similar absolute levels of creativity, someone could, in the absence of a copyright, begin offering competing copies of the computer program far more quickly than someone could begin offering competing copies of the car. *See* Glynn S. Lunney, Jr., Lotus v. Borland: *Copyright and Computer Programs*, 70 TUL. L. REV. 2397, 2428 (1996) [hereinafter Lunney, *Lotus v. Borland*].

153. *See* EDWIN MANSFIELD ET AL., TECHNOLOGY TRANSFER, PRODUCTIVITY, AND ECONOMIC POLICY 132–53 (1982) (summarizing empirical investigation of imitator's cost advantage); Edwin Mansfield et al., *Imitation Costs and Patents: An Empirical Study*, 91 ECON. J. 907, 909 (1981) (noting average ratio of imitation costs to innovation costs of "about 0.65" in various industries where products receive patent protection).

154. In the parallel invention case, the parallel inventor, unless unusually more or less efficient at innovation than the original, will likely incur innovation expenses similar to those incurred by the original innovator. Thus, we might expect prices to fall somewhat in the case of entry through independent invention, but perhaps not to fall as much as in the case of copying competitors. Even with parallel invention, however, market forces may lead both the original inventor and the parallel inventor to marginal cost pricing where neither can recover their creative investment.

petitors will rely more on what they have copied from the innovator and will invest less creativity of their own. These competitors will therefore be able to charge a lower price while still recouping their creative investments. Falling prices for competitors will in turn increase pressure on the innovator to reduce the price for her product or risk losing market share, and will thereby reduce the innovator's ability to obtain innovation rents during the post-entry period.

The last two factors, product differentiation and natural or network monopoly character, are general sources of market power in the economy that can arise in established product markets, as well as in markets for new products. Yet, creating a new product may enhance an individual's opportunity to earn rents associated with these factors. Efforts at product differentiation aim to persuade consumers that one product is desirably different than others available. These efforts may prove easier or more successful when tied to an original innovative product.[155] Similarly, where a product market demonstrates natural or network monopoly characteristics, being first into the market may enable the innovator to establish long-term dominance of the market.

Although there is sharp debate over the precise extent of the innovation rents available and the circumstances in which they are sufficient to ensure the proper level of innovative activity,[156] the availability of such rents establishes that some creative investment will occur even in the absence of the expectation of a patent. Thus, contrary to the suggestion of the perfect competition model, patents, copyrights, or some other form of legal protection for the information contained in a creative product are not strictly necessary to ensure that *some* non-gratuitous creative work will occur. Yet, the innovation rents available in the absence of a patent may not prove sufficient in every case to cover the innovation costs present. Patents may therefore prove desirable to ensure that *enough* innovation occurs.

Granting a patent will tend to increase the available innovation rents by prohibiting others from making, using, or selling the new product as it is set forth in the patent claims. In some cases, this may completely exclude others from a relevant product market.[157] More typically, a

155. *See* Schmalensee, *supra* note 147, at 349; *see also* Cooper & Kleinschmidt, *supra* note 112, at 182 ("The most important product variables [that correlate with] Financial Performance are [first, whether] [t]he product was superior to competitive products in the eyes of consumers.").

156. Despite this debate, surveys tend to establish that those involved in research perceive secrecy and lead-time advantages as providing more effective protection of technological advantage than patents. *See* Levin et al., *supra* note 150, at 798.

157. To understand some of the difficulties that may arise in resolving this issue, compare Edmund W. Kitch, *Patents: Monopolies or Property Rights?*, in 8 RES. L. & ECON. 31

patent may simply require competitors to work around the patent protection to identify an alternative product that does not infringe the patent yet still proves acceptable to consumers as a substitute for the original.[158] Even such limited protection will likely increase the innovation rents available. First, such limited protection will likely lengthen the innovator's lead-time as a competitor will usually need more time to work around a patent than simply to copy a new product. Second, it will likely increase the competitor's own creative investment, again because working around the patent is a more difficult and time-consuming task than simply copying. Increased costs for the competitors may reduce their ability to undercut the innovator's price, deter some competitors' entry,[159] and increase the post-entry price the innovator may profitably charge. Third, where a competitor must work-around a patent, the innovator may more easily persuade consumers that material differences remain between her original and the competitor's imitation. This may facilitate her ability to differentiate her product, and thereby enable her to increase the price she may charge and the rents she may collect during the post-entry period.

Given this background, we can now develop a simple model of investment decisions to explore the effects of patents on the allocation of creative resources.

B. *A Simple Model of Investment Decisions*

To examine the relationship between innovation rents, patent protection, and the allocation of resources, consider a situation where an individual is trying to decide between two investments. One investment will lead to Product A; the second to Product B. Both products will require the investment of both creative and non-creative resources, but Product B will require somewhat more creative and somewhat less non-creative resources than Product A. If our individual is otherwise indifferent between these two investments and her available resources may

(1986) (asserting that Xerox's patents on its copying technologies gave it no market power), with F. M. Scherer, *Comment on Edmund Kitch*, in *id.* at 51–57 (ridiculing Kitch's conclusions).

158. *See* MANSFIELD ET AL., *supra* note 153, at 153 ("The median estimated increase in the ratio of imitation cost to innovation cost was 11 percent.").

159. *See id.* at 149–50; Lunney, *Reexamining Copyright*, *supra* note 87, at 609 n.416, 611 n.420, & 612 n.423 (noting that under given assumptions number of copying competitors that entered market fell from 6.14 to 2.13 to 1.40 as scope of copyright protection for original work increased).

be used in either a creative or non-creative capacity,[160] she will pick the investment with the higher risk-adjusted return.

Given the balance of creative and non-creative resources required for these two products, we should expect our investor to earn more innovation rents from Product A than from Product B, if the two products are otherwise comparable in terms of total cost and social value ("otherwise comparable"). This follows from the fact that investments in creativity can usually be copied more quickly and at less expense than non-creative investments. Simply as a practical matter, the physical task of copying the ideas, design, or other information to which a creative investment leads is likely to prove easier than the physical task of duplicating the non-creative work involved in building the product itself. A competitor can often capture the ideas and information generated by creative investments simply by carefully examining the resulting product, without having to duplicate the time-consuming research herself. In contrast, there is no similar shortcut for the time required to duplicate physically the new product.[161] Because the Product A investment required relatively more non-creative resources, while the Product B investment required relatively less, it will likely take a competitor longer to physically duplicate Product A than Product B. For similar reasons, a competitor will also likely obtain a greater cost advantage by copying Product B.[162] Both the shorter lead-time and the increased copying advantage for Product B indicate that the innovation rents available from an investment in Product B will likely prove lower than those available from investing in Product A.

Because of the increased innovation rents available, our investor will likely devote her resources to the more attractive investment—Product A. We can generalize this result as the following principle: Given a choice of investing in two creative products that are otherwise

160. This second assumption is not likely true as a general rule. Different people have natural gifts and have trained those gifts in different ways. One hour of work from someone who has worked all her life as a farmer would not yield the same result if applied to the design of antilock brakes or economic theory, any more than one hour of work from someone who has worked all her life as automobile engineer or economics professor would yield the same result if applied to plowing a field.

161. Sometimes, the information is the product, and in such cases, copying may require little or no non-creative work. *See* Lunney, *Lotus v. Borland*, *supra* note 152, at 2428–29 (comparing the division of cost between creative and non-creative resources for the design of a car to the division for a novel). An example might be digitally-stored and digitally-transmitted information.

162. If copying allows a competitor to rely entirely on our innovator's creativity investment and avoid any creative investment of her own, the competitor's costs for her Product B would be 60 percent of our innovator's. If a competitor can obtain similar costs savings (i.e. the entire creative investment) by copying Product A, the competitor's costs for her Product A would be 80 percent of our innovator's.

comparable, an investor will earn more innovation rents and a higher private return by investing in the product in which creativity is a smaller fraction of the total product cost.[163]

We can extend this principle to explore the issue of nonobviousness and allocative efficiency by comparing a series of investment decisions made with respect to two sets of potential investments. Each set consists of five different potential investments, ranked by decreasing social value. We will further assume that the corresponding investments in the two sets are of equal social value, and that: (1) each requires the same total investment of resources (5 units); (2) each entails some creative and some non-creative resources; and (3) the second set of investments requires more creative resources relative to non-creative resources than the first set of investments (1 creative unit and 4 non-creative units for Set 1 investments; 2 creative units and 3 non-creative units for Set 2 investments). Table 1 reflects these assumptions.

TABLE 1
INVESTMENT OPTIONS

Set 1 Investments	*Resources Req'd Creative: Non-Creative*	*Set 2 Investments*	*Resources Req'd Creative: Non-Creative*	*Social Value*
1-A	1:4	2-A	2:3	10
1-B	1:4	2-B	2:3	8.75
1-C	1:4	2-C	2:3	7.5
1-D	1:4	2-D	2:3	6.25
1-E	1:4	2-E	2:3	5

Although Table 1 identifies what each investment is worth to society, rational, profit-maximizing individuals do not respond, directly to the social value of an investment, but to the private return. We therefore need some sense for what each investment returns to its investors. Given our analysis thus far, we know that innovation rents increase as the social value of the resulting product increases. We should therefore expect a greater private return on investment 1-A than on investment 1-B, and a greater private return on investment 2-A than on investment 2-B. We also know that innovation rents for otherwise comparable investments will tend to decrease as the creativity invested increases as a fraction of the resulting product's total cost. Thus, we should expect a greater pri-

163. *See* Lunney, *Reexamining Copyright*, *supra* note 87, at 590.

vate return on investment 1-A than on investment 2-A, and a greater private return on investment 1-B than on investment 2-B.

This second difference between our two sets of investments creates the potential for a Set 1 investment with a lower social value to nevertheless have a higher private return than a Set 2 investment. For example, if we compare investments 1-B and 2-A, we must resolve two competing influences. On the one hand, because investment 2-A generates a higher social value than investment 1-B, it should tend to generate somewhat higher innovation rents.[164] On the other, because creativity represents a higher fraction of the total cost in investment 2-A, the new product resulting from investment 2-A will likely prove more easily and more quickly copied than the new product resulting from investment 1-B. The greater ease with which the product resulting from investment 2-A can be copied will tend to reduce the innovation rents from investment 2-A compared to those from investment 1-B. Which effect will predominate is an empirical matter, but where, as here, the creativity invested as a fraction of total cost is substantially higher for one product than for another, there is good reason to believe that the greater ease of copying factor will predominate. To the extent that it does, investment 2-A will generate a lower private return than investment 1-B.[165]

We know empirically that in some cases, the innovation rents available without a patent will prove sufficient to attract the necessary investment to the most valuable inventive activity ("desirable invention"), and that in other cases, they will not. We can use Set 1 and Set 2 to reflect this empirical observation by assuming that the innovation rents for Set 1 investments are sufficient to attract the necessary resources without a patent, but that the Set 2 investment innovation rents are not. In other words, we will assume that the greater ease of copying factor predominates and that the private return available for the Set 2 investments will be less than the private return available for a Set 1 investment, even where the Set 1 investment generates lower social value.

With this background, we can now explore the interaction between innovation rents, the availability of patent protection, and allocative efficiency by considering three cases. In the first case, we will assume that no patent protection is available. This is our set-up case, and is meant merely to illustrate our assumption that in the absence of patent protection, individuals will invest in the Set 1 investments, but not the Set 2

164. *See supra* text accompanying notes 150–151.

165. If the ease of copying factor predominates, then in the absence of a patent, the Set 2 investments are so easy to copy that they will earn little or no innovation rents, or alternatively, they may earn some innovation rents, but still less than can be earned by Set 1 investments that generate much lower social values.

investments. In the second, we will assume that patent protection is available for the new products resulting from the Set 2 investments. This second case is meant to illustrate the results where we award patent protection only to those inventions that would not have been made or disclosed but for the added incentive of a patent. It reflects *Graham*'s "weeding out" understanding of the nonobviousness requirement. Finally, in the third case, we will assume that patent protection is available for the new products resulting from both sets of investments. This third case is meant to illustrate a system where we award patents to every new and useful advance over the prior art. It reflects a low standard for nonobviousness where anyone who contributes something new and useful is presumptively entitled to a property right (i.e. a patent) reflecting her contribution.

Moreover, because the model will focus solely on allocative efficiency, we will introduce a resource constraint into the model by assuming that for these two sets of investments, there are only twenty units of resources available (which can be used interchangeably either as creative or non-creative resources). We know, given the social values associated with the investments available reflected in Table 1, that these twenty units would be optimally allocated if invested in 1-A, 1-B, 2-A, and 2-B. Such allocation generates the highest social value given the resources available. The approach to the nonobviousness issue that leads to such an allocation best satisfies the objective of a property system. We can therefore identify the appropriate standard of nonobviousness by seeing which approach better promotes allocative efficiency.

Case One—No Patent Protection: As discussed, we have assumed that the innovation rents available in the absence of a patent are sufficient to attract resources to the Set 1 investments, but not the Set 2 investments. We made this assumption not because it is convenient or because it assumes the desired answer but because it corresponds to our real world observation that innovation rents available without a patent are sometimes sufficient to encourage desirable invention and sometimes not. Although the precise numbers we use are not important,[166] one

166. Although the precise numbers set forth in the table are simply for illustration, they must satisfy three requirements. First, within a given set of investments, private return must increase as social value increases. Thus, the private return for investment 1-A must be higher than that for 1-B, and 1-B must be higher than 1-C, and so on. Second, the private returns for each Set 2 investment must be lower than the private return for the corresponding Set 1 investment. Thus, the private return for investment 2-A must be lower than 1-A. Third, given our assumption that Set 1 and Set 2 investments represent our two sides of the innovation rent divide, private returns for each Set 2 investment must prove insufficient to attract the necessary resources. Here I have used private returns for each Set 2 investment of below 5 on the assumption that each unit of resource has a price of one, and thus that a private return of at least 5 is necessary to attract 5 units of resources.

plausible set of private return pay-offs for the investments available under these assumptions is as follows:

CASE #1:
PRIVATE RETURNS WITHOUT PATENTS

Set 1	*Private Return*	*Set 2*	*Private Return*[167]
1-A	6	2-A	4.5
1-B	5.75	2-B	4.3125
1-C	5.5	2-C	4.125
1-D	5.25	2-D	3.9375
1-E	5.0	2-E	3.75

Given this set of pay-offs for the available investments, we would expect the property system, in the absence of any patent protection, to lead individuals to allocate their resources to investments 1-A, 1-B, 1-C, and 1-D. Because each investment requires five units of resources, with a total of only twenty units available, and because the private return on investment 1-D is higher than that available from any Set 2 investment, such an allocation of the resources would generate the highest private return for the investors. Although such an allocation generates the highest private return, it is inefficient. It leads individuals to devote resources to investments 1-C and 1-D that would have produced more value to society had they been devoted to investments 2-A and 2-B instead. Thus, under our assumptions, the absence of any patent protection leads to allocative inefficiency.

Case Two—Patent Protection for Set 2 Investments Only: In this case, we will grant patents to the products resulting from Set 2 investments only, in an attempt to follow *Graham*'s suggestion of awarding patents only where the invention would not have been disclosed or devised but for the inducement of a patent. As discussed, a patent will increase the innovation rents because it makes the patented invention more difficult to copy. As a result, awarding patents to Set 2 investments will increase the innovation rents and hence the overall private returns associated with the Set 2 investments. Indeed, if we manage to

167. Total return for the two products are calculated by assuming that our investor expects a total private return of innovation rents plus a cost-based payment for the non-creative investment. I have assumed that the innovation rents will equal 20 percent of each Set 1 investment's associated social value and 15 percent of each Set 2 investment's social value. The reduced innovation rents associated with the Set 2 investments correspond to our assumption that the greater ease of copying factor will predominate.

give those patents the proper scope,[168] we can bring the private returns for the Set 2 investments more closely in line with the otherwise comparable Set 1 investment. Again, the precise numbers we use are not important,[169] but one plausible set of private return pay-offs under these assumptions is as follows:

CASE #2:
PRIVATE RETURNS WITH PATENTS FOR SET 2 ONLY

Set 1	*Private Return*	*Set 2*	*Private Return*[170]
1-A	6	2-A	6
1-B	5.75	2-B	5.625
1-C	5.5	2-C	5.25
1-D	5.25	2-D	4.875
1-E	5	2-E	4.5

Given this set of available pay-offs, we would expect the property system, which now includes patents for Set 2 investments, to lead individuals to allocate the available resources in investments 1-A, 1-B, 2-A, and 2-B. Such an allocation generates the highest private return for our investors. As this allocation is also the socially optimal result under the circumstances, a patent system that grants patent protection to Set 2 investments would promote allocative efficiency and could fully claim the normative desirability of property generally.

Case #3—Patents for Both Sets of Investments: In this case, we will grant patents to the products resulting from both Set 1 and 2 investments, in an attempt to follow the simply-property perspective's initial assumption that any new and useful advance merits a property right (i.e. a patent) reflecting the contribution. As discussed, patent protection will

168. The issue of a patent's proper scope is beyond the ambit of this essay. I would only say that even if we do not get the scope exactly right, with the result that private returns are not precisely comparable for inventions with otherwise comparable costs and social value, the patent system will tend to improve allocative efficiency so long as it brings private returns more in line for otherwise comparable inventions.

169. Again, the precise numbers given for the private returns are simply illustrative, but the numbers must satisfy three conditions. First, within each set of investments, private return must increase as the social value of the invention increases. Second, the availability of patent protection of proper scope will increase the private return of Set 2 investments compared to the no-patent case. Third, if the patent protection is of proper scope, than granting patents to the Set 2 investments will also bring the private return for each Set 2 investment closer to the private return for the corresponding Set 1 investment.

170. To reflect the grant of the patent for Set 2 investments, I have increased the innovation rents available to the Set 2 investments from 15 percent to 30 percent of the investment's social value.

increase the innovation rents associated with a creative investment. As a result, granting patents to the products resulting from both sets of investments will therefore lead to increased innovation rents and hence increased private returns for both sets of investments compared to Case #1.[171] If patent protection provides comparable increases in innovation rents for both sets of investments,[172] one plausible set of private return pay-offs under these assumptions is as follows:

CASE #3:
PRIVATE RETURNS WITH PATENTS FOR BOTH

Set 1	*Total Return*[173]	*Set 2*	*Total Return*
1-A	7.5	2-A	6
1-B	7.0625	2-B	5.625
1-C	6.625	2-C	5.25
1-D	6.1875	2-D	4.875
1-E	5.75	2-E	4.5

Given this set of available pay-offs, we would expect the property system, which now includes patents for both Set 1 and 2 investments, to lead individuals to allocate their resources to investments 1-A, 1-B, 1-C, and 1-D. As in Case #1, such an allocation generates the highest private return for the resources available. However, also as in Case #1, such an allocation is not efficient. Such a property regime leads individuals to devote resources to investments 1-C and 1-D that would have generated more value for society if devoted to investments 2-A and 2-B.

Thus we have shown that providing patent protection for both sets of investments would not promote allocative efficiency. Rather, it

171. I have assumed that the Case #3 private returns for the Set 2 investments will remain the same as they were in Case #2.

172. Again, the precise figures given for private returns are simply illustrative, but the figures must satisfy three conditions. First, within each set of investments, private return must increase as the social value of the invention increases. Second, the availability of patent protection for Set 1 investments will increase the private return for such investments compared to the no-patent cases. Third, unless courts are going to vary the scope of protection available for Set 1 patents and Set 2 patents, then patent protection should lead to similar increases in the innovation rents available for each set of investments.

173. There are two ways we might think of the increase in the Set 2 innovation rents. First, we might look at the increase from 15 percent to 30 percent as a doubling, and hence double the Set 1 innovation rents to reflect a similar increase (from 20 to 40 percent). Or, second, we might consider the increase a 15 percentage point increase, and increase the Set 1 innovation rents similarly (from 20 to 35 percent). Because the second paints a more optimistic picture of the efficiency effects from granting patents to both, and is therefore the more conservative assumption given my perspective (patents only for some), I will adopt the second approach.

would generate a result as inefficient as having no patents at all. By granting patents for every new and useful product, the patent system would lead individuals to devote their scarce creative resources to less valuable activities. Such an approach cannot therefore claim normative desirability by pretending that it is "simply" property.

C. *Initial Implications of the Model for the Nonobviousness Standard*

The above model answers our first question regarding the nonobviousness standard: Patents should only be granted and enforced for *some, not all,* technical advances. In short, *Graham* was right. We should grant patents only to those desirable inventions that would not have been disclosed or devised but for the inducement of a patent. Moreover, to reach this conclusion, we need not assume that a patent is a monopoly or that a patent otherwise creates undesirable deadweight losses. Our model focuses on the patent system solely as a component of the property system more generally, and uses that property-based framework to examine which nonobviousness standard better promotes the allocation of creativity to its highest value use. Thus, the model and its resulting conclusions do not rely on the assumption that a patent is properly characterized as a monopoly. For this reason, the model and its conclusions are fully consonant with former Chief Judge Markey's perspective that a patent is simply property.

From this property perspective, the model identifies the inconsistency that may arise between private return and social value for otherwise comparable investments in the absence of patent protection as the central justification for a patent system. In the absence of patent protection, some innovative investments will earn sufficient innovation rents to prove attractive; others will not, even where they would prove more valuable to society. This dichotomy creates the risk that creative resources will be devoted to socially less valuable innovation. By granting patent protection only to those desirable inventive efforts that would not earn sufficient innovation rents in the absence of a patent to prove attractive, we can correct this inconsistency between public and private return, and ensure that innovative investments that generate similar social value for a similar expenditure of resources also generate similar private returns. By correcting this inconsistency, patent protection will tend to lead individuals to allocate their creative resources to their highest value use and will thereby serve, like property more generally, to promote allocative efficiency. On the other hand, granting patents to all innovative efforts will maintain this inconsistency and will not therefore promote allocative efficiency. To complete the picture, the

following section attempts to define a nonobviousness standard precisely tailored to these allocative efficiency concerns.

D. *Defining Nonobviousness: The Creative Investment Fraction*

When we turn to the question of which new products and processes should satisfy the nonobviousness requirement and receive a patent, our three Cases suggest that the dominant consideration should be the creativity invested in the new product or process as a fraction of the invention's total cost as marketed (the "creative investment fraction"). This is the key difference between the Set 1 and Set 2 investments that leads to the variation in the private return available for otherwise comparable products. As it is this variation in private and social returns that, if left unaddressed, would lead to the misallocation of scarce resources that the patent system seeks to redress, the creative investment fraction largely dictates the circumstances under which granting a patent is likely to promote allocative efficiency.[174] The creative investment fraction is also, from the traditional perspective, the single factor that best identifies "those inventions which would not be disclosed or devised but for the inducement of a patent."[175] Despite their differences, both the property perspective and the traditional perspective thus essentially agree on the proper approach to the obviousness issue.

In looking at the creativity invested criteria itself, the creativity invested should be considered as a fraction of total costs, rather than as an absolute sum, because innovation rents, as with rents more generally in economics, are typically expressed as, and earned as, a percentage over marginal cost.[176] An advanced degree in economics is not required to understand why economists treat rents in this fashion. Even with near-perfect competition, a competitor can sustain a one-dollar mark-up on a

174. For the reasons discussed previously, whether the invention takes place in a crowded field may also prove relevant to determining when the grant of a patent will promote allocative efficiency.

175. Graham v. John Deere Co., 383 U.S. 1, 11 (1966).

176. In antitrust market analysis, for example, the Department of Justice and the Federal Trade Commission have proposed defining relevant markets in part by asking whether a producer may impose a "small but significant and nontransitory" increase of five or perhaps more *or* less over a competitive price. *See* DEP'T OF JUST. & FTC, HORIZONTAL MERGER GUIDELINES § 1.11 (1997); *see also* Satellite Television & Associated Resources, Inc. v. Continental Cablevision, 714 F.2d 351, 355 n.5 (4th Cir. 1983), *cert. denied*, 465 U.S. 1027 (1984) (applying Guidelines approach to define relevant product market); Bon-Ton Stores, Inc. v. May Dept. Stores Co., 881 F. Supp. 860, 872 (W.D.N.Y. 1994) (using Guidelines approach to define relevant product market).

two-hundred-dollar product more readily than on a two-dollar product.[177] Consumers are more likely to notice the one dollar mark-up where it creates a noticeable difference in the price of the product. And having noticed a sharp price difference, consumers are also more likely to undertake the effort to find the product elsewhere.[178]

When we turn to creative investments, similar principles apply. One million dollars may seem like a large creative investment, and it is in some absolute sense. But if this investment leads to an idea that is then combined with an additional ninety-nine million dollars in non-creative investment, an innovator need only charge a price for the resulting product 1.01 percent higher than what would otherwise be the competitive price in order to recover her creative investment. In contrast, if investing the same creative resources leads to an idea that is then combined with an additional one million dollars in non-creative investment, an innovator would need to be able to charge a price 100 percent higher than the competitive price to recoup her creative investment. Even with near-perfect competition, an innovator could likely sustain a price 1.01 percent over the perfectly competitive price.[179] On the other hand, so long as there is any competition at all, an innovator will have trouble sustaining a 100 percent mark-up. If we are going to think of and express innovation rents as a percentage over marginal costs, looking at the creative investment as a similar fraction facilitates a more ready determination of whether the innovation rents available will likely cover the creative investment entailed.[180]

Moreover, expressing the creativity investment as a fraction of the total cost provides a more accurate and more reliable indication of the innovation rents likely available than the dollar value of the creative investment alone could provide. As we have seen, the creative investment fraction suggests the extent to which copying competitors can undercut the innovator's price. The creative investment fraction therefore tends to identify the likely price levels and corresponding rents available in the post-entry period. The creative investment fraction also

177. *See* Mark G. Kelman, *Trashing*, 36 STAN. L. REV. 293, 316–17 (1984) (noting that similar Palo Alto gas stations charged disparate prices for full service and that similar Washington, D.C., photographers charged disparate prices for passport photos).

178. We can use Professor Kelman's example to illustrate: While gas prices may often vary a few cents or more between competing stations, gas prices seldom vary by fifty cents or more.

179. *See, e.g.*, Kelman, *supra* note 177, at 316–17.

180. For example, if we know that innovation rents will run 5 percent over marginal cost and we know that the creative investment is 4 percent of the total costs, then we can immediately see that the innovation rents will cover the creative investment without any need to know the number of units sold, the actual market price, or the absolute magnitudes of the creative and non-creative investments.

suggests both how much time a competitor can save by copying the idea reflected in a new product and how much time a competitor must actually spend on the physical task of duplicating the tangible product. The creative investment fraction thus tends to identify an innovator's likely lead-time advantage. For these reasons, creativity as a fraction of total cost provides an indication of the likely innovation rents available that is more reliable than the dollar value of the creative investment on its own. The creative investment fraction is therefore the better tool for identifying those cases where granting and enforcing a patent will promote allocative efficiency.

To apply this tool to resolve the obviousness issue, we need to resolve two issues—one factual, the other legal. The first issue is to determine as a factual matter the actual creative investment as a fraction of total product cost for the patent claims at issue.[181] One clear advantage of the creative investment fraction approach is that there should be direct evidence available to establish both the creative resources invested and the resulting product's total costs.[182] Although parties will no doubt attempt to slant expenditures to create a picture that favors their perspective, the adversary process should prove capable of creating a reasonably accurate picture of the actual creativity invested as a fraction of total product cost. Once the creative investment fraction is determined as a factual matter, it should then be compared against a legal standard for the fraction required to satisfy the nonobviousness standard. If the actual creative investment fraction exceeds the legal standard, then a strong presumption of nonobviousness would arise. If the actual expenditure fraction fell below the legal standard, a strong presumption of obviousness would arise. To account for those inventions that result from "a flash of creative genius," as well as to account for unusually inefficient inventors or artificially-inflated creative expenditures, parties may attempt to establish that the actual creative

181. Alternatively, we can approximate this fraction by using a creativity invested as a fraction of market price approach. For this alternative, we would divide the creativity invested by the number of units sold to determine a creativity-per-unit value. We could then divide this value by the new product's market price to obtain creativity as a fraction of market price.

182. If the product is not yet in production, then expected total cost should be used. We might also use some fixed, three- or five-year amortization period for determining total cost, rather than attempting to estimate total cost for the life of the new product. Estimating or calculating total cost will prove far easier for a shorter period, than for the indefinite future, and so long as we use a consistent amortization period, looking at the creativity invested as a fraction of the total cost (for a given period) should not introduce undue inaccuracy into the analysis. Given that lead-time periods, even with patents, are likely to prove short, the creative investment fraction calculated using a given period of total cost should remain a reasonably accurate indicator of likely innovation rents in the absence of a patent.

investment was unreasonably high or unreasonably low given the results achieved.[183] If a party successfully demonstrates that the actual creative investment was unreasonable, that showing would rebut the initial presumption regarding obviousness.

To implement this approach to nonobviousness, we also need some sense for the creative investment fraction that defines the point at which granting a patent will tend to promote allocative efficiency. On this question, unfortunately, the issue becomes decidedly less clear. There is simply no empirical evidence available that examines creative investment fractions or their role in determining the point at which a patent becomes necessary to induce desirable invention. Mansfield *et al.* in their study of patents and imitation costs estimated that an imitator could begin production of a new product at, on average, 65 percent of the innovator's costs.[184] The fact that they could successfully conduct such a study suggests that the proposed creative investment fraction approach is feasible. However, their study does not help us determine the "right" creative investment fraction for separating obvious and nonobvious inventions because it considered only costs associated with "developing and introducing" the product up to the point of "manufacturing and marketing start-up."[185] The study did not consider actual production costs and so did not address the point at which the crossover from sufficient innovation rents without a patent to insufficient rents would occur.[186]

In the absence of empirical evidence that directly addresses this issue, we are left to fall back on our general sense of the economy's competitiveness. To the extent we believe that the economy is near-perfectly competitive, then a patent is likely to prove necessary to induce an invention even where the creativity invested represents only a

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183. Of the secondary factors that the Federal Circuit has identified as relevant to the obviousness issue, I tend generally to agree with Professor Merges' analysis that failure of others is the most reliable and relevant evidence of a significant technical advance and that commercial success, licensing, and copying by others are far less reliable and relevant. *See* Merges, *supra* note 36, at 860–73. I would accord somewhat more weight to long-felt, but unsolved need than Professor Merges. *See id.* at 872. Failure of others and long-felt need both tend to establish, although failure of others does so more directly, that solving the problem represented a difficult or tricky task, and would therefore reasonably entail a substantial creative investment. Commercial success, licensing, and copying on their own do not as directly or as persuasively establish that fact.

184. *See* MANSFIELD ET AL., *supra* note 153, at 141, 152.

185. *Id.* at 140.

186. If we consider the creative investment as those resources necessary both to invent and to innovate, from discovery through initially bringing the product to market, then Mansfield et al. determined the costs savings available to copying competitors as a fraction of the creative investment alone, and did not consider the non-creative investment involved in producing the invention in tangible and marketable form.

small percentage, perhaps 2 to 4 percent,[187] of the resulting product's total costs. On the other hand, to the extent we believe that there are substantial imperfections in the economy's competitiveness, then a patent is likely to prove necessary to induce invention only where the creativity invested represents some more substantial percentage, perhaps 4 to 8 percent,[188] of the resulting product's total costs.

I must admit that these figures are, at this point, simply guesses—educated guesses perhaps, but guesses nonetheless. The lack of empirical evidence to resolve this key issue cautions against immediately adopting the creative investment fraction approach. I say this despite the fact that the proposed fraction approach better addresses patent law's underlying purpose and also provides an objective basis for resolving the nonobviousness issue. Despite these advantages, and in part because of them, the lack of empirical data persuades me that we should proceed slowly.[189] I would therefore propose, as a first step, that courts formally recognize the creative investment fraction as a form of objective evidence relevant to the nonobviousness issue.[190]

Formal recognition of the creative investment fraction as relevant to the nonobviousness issue would provide an opportunity to develop a base of empirical data and experience with the creative investment fraction approach. The data collected should help us identify more clearly the relationship between the creativity investment fraction and the level of innovation rents available. The data may thereby enable us to determine the precise creative investment fraction that the nonobviousness standard should require to support patentability.[191] At the very least,

187. There are likely to be quite radical differences of opinion as to these percentages. I consider 2 to 4 percent to be a small percentage, in the absence of other evidence, given that the Department of Justice and the Federal Trade Commission have proposed defining markets by looking for 5 percent or perhaps more or less price increases. *See supra* sources cited note 176. If five or ten percent price increases are potentially objectionable under antitrust law, while smaller price increases are unobjectionable, that provides some support for the proposition that innovation rents of up to 5 percent over marginal cost might be available in the absence of patent protection.

188. If the economy is not particularly competitive, and as the DOJ and FTC have suggested, 5 to 10 percent price increases are obtainable in the absence of strong competition, then it seems plausible that innovation rents even without a patent could enable an innovator to recoup creative investments that account for 4 to 8 percent of the total product cost.

189. Moving too quickly risks failure that could permanently color perception of this approach.

190. Even in the absence of such formal recognition, such evidence would, for the reasons given in this essay, satisfy Rule 401's relevancy standard on the nonobviousness issue. As a result, either the patent holder or the alleged infringer (depending on which way the evidence cuts) should seek to introduce and rely on such evidence to establish the nonobviousness or the obviousness of the claimed invention.

191. Such experience may also demonstrate that we need and can practically implement different fractions for different industries. The usual assumption in the literature is that

such empirical data may help us establish boundaries for patentability, where, for example, a creative investment fraction below two percent is presumed obvious, while a creative investment fraction above ten percent is presumed nonobvious. At the same time, parties and courts will be learning to use and understand the approach. This experience will help us identify any difficulties associated with the creative investment fraction and will help us determine whether cases such as serendipitous invention, where the approach may not directly apply, are likely to prove sufficiently common to warrant concern.

III. OBVIOUSNESS AND E-COMMERCE

When we turn to the field of e-commerce more specifically, we are confronted with the same issues of nonobviousness doctrine and policy that arise for patents more generally. To begin with, the Federal Circuit's doctrinal changes to the nonobviousness requirement, and more importantly, its simply-property perspective mean that the nonobviousness requirement will not prove, as a general rule under present law, a substantial hurdle for e-commerce patents. Doctrinally, both the elevation of the secondary factors to a central role in the obviousness inquiry and the substitution of the suggestion test for the Court's synergism test in cases involving combination patents will facilitate individuals obtaining patents for e-commerce inventions. Although some, if not most, of the first wave of e-commerce patents involve nothing more than the application of existing business methods to the Internet and require only the adaptation of existing technology to a particular use rather than any true technical advance, most of these patents would likely survive a nonobviousness challenge under the Federal Circuit's approach.[192] The elevation of the secondary considerations to a central role in the nonobviousness inquiry effectively means that anyone who first moves an existing business to the Internet, obtains a patent thereon, and then succeeds commercially will have a strong nonobviousness case almost without regard to the technical advance entailed. Moreover, where an alleged infringer could once have challenged such a patent as simply a combination of existing prior art elements that lacks a syner-

patent laws cannot practically be made industry specific. *See* Michael Waterson, *The Economics of Product Patents*, 80 AM. ECON. REV. 860, 869 (1990) ("This paper, like many others concerned with welfare aspects of patents, faces one major problem in drawing conclusions: it is hardly likely that patent law can be made industry specific.").

192. *See* Amazon.com, Inc. v. Barnesandnoble.com, Inc., 73 F. Supp. 2d 1228, 1241–42 (W.D. Wash. 1999), *vacated by* 239 F.3d 1343 (Fed. Cir. 2001) (granting preliminary injunction and finding likelihood that Amazon.com's patent on single action method for shopping on the Internet would not be proven obvious).

gistic effect, that basis is no longer available.[193] Rather, the alleged infringer would have to establish some prior art teaching, suggestion, or motivation to combine the elements. While such suggestion may be found in some e-commerce cases, e-commerce's rapid advance usually means that an individual who first sees potential profit in a possible combination will attempt the combination herself, rather than publishing the idea for others to attempt.

Prior to the tenure of the Federal Circuit, an alleged infringer could also argue, as a matter of policy under the traditional view, that the nonobviousness standard should be strictly enforced because of the risk that a patent might impose monopoly losses on consumers without any offsetting public benefit. But the Federal Circuit has rejected the view that patents are monopolies and would likely reject such policy arguments (if it did not go further and chastise the attorney for making it). Under the simply-property perspective, a patent is simply property, not monopoly, and an individual who creates something new and useful would seem presumptively entitled to a property right reflecting her contribution. The Federal Circuit's adoption of this simply-property perspective on patents will strongly reinforce the barriers to a successful obviousness showing that the Federal Circuit has erected through its doctrinal changes.

While recent empirical evidence suggests that most litigated patents will be upheld, there remains considerable uncertainty as to whether a particular patent in a particular case will be upheld. As discussed, the Federal Circuit has not always been consistent in applying its nonobviousness doctrine to particular cases.[194] The holder of a patent on an e-commerce invention can usually expect that so long as the claimed invention (1) represents some advance over the prior art and (2) becomes a commercial success, her invention will satisfy the nonobviousness requirement. But demonstrating the presence of some technical advance plus commercial success has not always been enough to establish nonobviousness even under the Federal Circuit.[195] Similarly, while the holder of an e-commerce patent representing a new combination of old elements can usually expect the Federal Circuit to uphold the patent absent some prior art suggestion to combine the elements, sometimes the Federal Circuit will find that the suggestion was implicit in the prior art or inherent in the problem to be solved.[196] As a result, despite the sense

193. At least, it is not available unless and until the Court accepts certiorari on a case raising the issue and re-establishes the synergism test.

194. *See supra* text and accompanying notes 116–121.

195. *Compare* cases cited *supra* in note 116 with cases cited *supra* in note 117.

196. *Compare* cases cited *supra* in note 118 with cases cited *supra* in note 119.

that patents generally are more likely to be upheld under the Federal Circuit, considerable uncertainty remains over precisely which patents will be upheld and which patents will not be.

The recent litigation involving Amazon.com's one-click patent for on-line shopping well illustrates all of these difficulties.[197] Although I do not necessarily agree that every translation of a real-world activity to the Internet is obvious, adapting one-click shopping method to the Internet represented a relatively simple translation presenting few, if any, new technical challenges. Yet, following the approach to the nonobviousness issue that the Federal Circuit has established, the district court found that Amazon.com had a reasonable probability of success on the obviousness issue and issued a preliminary injunction against Barnesandnoble.com's similar on-line shopping method.[198] In reaching that conclusion, the district court identified several differences between Amazon.com's claimed invention and the prior art, and then relied on evidence of commercial success and other "objective factors" to establish that such differences represented a nonobvious advance.[199] On appeal, the Federal Circuit neither reversed nor affirmed. Rather, it vacated the district court's ruling on the basis that Barnesandnoble.com had raised serious questions regarding the patent's obviousness.[200] The court expressed serious reservations regarding the patent, reciting a number of prior art references that were very similar, if not identical to the patent claims, and discounting the evidence of " 'secondary considerations' " "in view of the substantial question of validity raised by the prior art references."[201] Yet, even so, the panel was careful to insist that while Barnesandnoble.com had "mounted a serious challenge to the validity of Amazon's patent" sufficient to defeat Amazon.com's motion for a preliminary injunction, "the ultimate question of invalidity . . . is a matter for resolution at trial."[202] Through its decision, the Federal Circuit managed to maintain the presumptive validity of a patent that represented a trivial technical advance, while at the same time creating vast uncertainty regarding the patent's ultimate validity.

When we move beyond a description of what is likely to happen with e-commerce patents under present law to a consideration of what should happen, we are confronted with the same question we face for patents more generally: What is the proper role for the nonobviousness

197. *See* Amazon.com, Inc. v. Barnesandnoble.com, Inc., 73 F. Supp. 2d 1228 (W.D. Wash. 1999), *vacated by* 239 F.3d 1343 (Fed. Cir. 2001).

198. *Amazon.Com, Inc.*, 73 F. Supp. at 1232–37.

199. *Id.*

200. *Amazon.com, Inc.*, 239 F.3d at 1358–66.

201. *Id.* at 1360–66 (quoting the district court).

202. *Id.* at 1360.

requirement? The traditional perspective identified and assigned nonobviousness a central role of separating those inventions where the patent bargain made sense from those where it did not. In contrast, nonobviousness appears to have no sensible role under the simply-property perspective. So long as an advance is new and useful, the grant of a corresponding property right would seem appropriate. To restore a sense of purpose to the nonobviousness requirement and to identify its proper role under a simply-property perspective, we must examine that perspective's normative merits. In doing so, we find that the simply-property perspective attempts to establish the normative desirability of a patent by drawing an analogy between patents and other admittedly desirable forms of property. Yet for this analogy to hold, the patent system must serve, as private ownership more generally serves, to promote the allocation of scarce resources to their highest value use. By exploring the relationship between patents and allocative efficiency, we have identified two key principles for structuring the patent system to promote allocative efficiency. These principles should apply to e-commerce patents as well as to patents more generally.

First, to promote allocative efficiency, we should extend patent protection only to those e-commerce inventions not likely to have occurred but for the expectation of a patent. Although this result accords with the result reached by the traditional perspective, an allocative efficiency approach does not justify this result by assuming that patents are monopolies. Rather, it justifies this result by looking at the patent system as a property regime intended to allocate scarce resources to their highest value use. From this perspective, the fear is not that too many e-commerce patents will lead to undesirable monopoly losses, but that granting e-commerce patents too readily will lead individuals to devote their creativity to less valuable creative endeavors. As our model suggests, granting a patent to each new and useful advance in e-commerce will tend to attract too much creativity to less valuable e-commerce investments and will thereby starve more valuable e-commerce investments of the creativity they need.[203] In contrast, granting patents only to those inventions not likely to have occurred but for the expectation of a patent will tend to promote the allocation of our limited supply of creativity to its highest value use. We should therefore use the nonobviousness requirement to extend patent protection only to those desirable e-commerce inventions that would not likely have occurred but for the expectation of a patent.

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203. *See supra* pp. 37–38.

Second, to identify those cases where an invention would not likely have occurred but for the expectation of a patent, we should focus the nonobviousness inquiry on the creativity invested as a fraction of the resulting e-commerce product's total cost. This creative investment fraction provides a reliable tool for separating those desirable inventions that would likely have occurred even without a patent from those that would not have. With use, this creative investment fraction should become a more reliable and certain basis for identifying those cases where granting or upholding a patent will tend to promote allocative efficiency. Moreover, because it represents a truly objective inquiry, it should also reduce the uncertainty associated with the nonobviousness standard.

For e-commerce patents, as for patents more generally, following these two principles largely reconciles the traditional and simply-property perspectives and enables us to define a sensible and central role for the nonobviousness standard within the patent system. Following these two principles should also significantly improve the patent system's ability to ensure that the creative resources available for e-commerce are allocated to their highest value use. Finally, by re-creating the patent system as a tool to promote allocative efficiency, following these two principles will enable a patent to lay justifiable claim to the label "simply property."