

Certainty, Fence Building, and the Useful Arts

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I. INTRODUCTION

Patent law is about building fences.¹ The demarcation of one's proprietary interest is facilitated by requiring the inventor, when filing a patent application, to point out distinctly and with particularity what he regards as his invention.² Concomitant with this type of fence building are notions of certainty and predictability. The prospect of certainty in the patentee's property interest has several benefits, one of which is to create a sense of security which permits the patentee to secure risk capital from investors, which in turn facilitates the commercialization of the claimed invention.³ A related benefit is the patentee's ability to send a clearly defined message of deterrence to competitors, in effect blocking them from developing the same or very similar technology.⁴ This type of certainty can be called "proprietary certainty." At the same time, it is important for the public to be able to ascertain exactly where the patentee's property interest begins and ends so that interested parties, namely competitors of the patentee, can

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1. In the late 19th century, the Commissioner of Patents wrote of the importance of claims as "set[ting] definite walls and fences about the rights of the patentee." Charles Eliot Mitchell, *Birth and Growth of the American Patent System*, in CENTENNIAL PROCEEDINGS OF THE UNITED STATES PATENT SYSTEM 1891, at 43, 51 (Executive Comm. of the Patent Centennial Celebration ed., 1990).

2. See 35 U.S.C. § 112 (1994) ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.").

3. Judge (then patent attorney) Giles Rich wrote a series of articles in 1942 exploring the relationship between patent law and anti-trust law. He wrote of an inducement theory that "is by far the greatest in practical importance." Giles S. Rich, *The Relation Between Patent Practices and the Anti-Monopoly Laws*, 24 J. PAT. & TRADEMARK OFF. SOC'Y 159, 177 (1942)

[This theory] applies to the inventor but not solely to him, unless he is his own capitalist. . . . It might be called the *inducement to risk an attempt to commercialize the invention*. It is the "business" aspect of the matter which is responsible for the actual delivery of the invention into the hands of the public. *Id.* (emphasis added); see also *Patlex Corp. v. Mossinghoff*, 758 F.2d 594, 599 (Fed. Cir.) ("[E]ncouragement of investment-based risk is the fundamental purpose of the patent grant . . ."), *modified*, 771 F.2d 480 (Fed. Cir. 1985).

4. See Wesley M. Cohen et al., *Appropriability Conditions and Why Firms Patent and Why They Do Not in the American Manufacturing Sector* 17 (June 24, 1997) (unpublished manuscript, on file with author).

terminate wasteful “rent-seeking” behavior in the form of duplicative research,⁵ and commence efforts to either improve upon or design around the patented invention without fear of reprisal. We can label this type of certainty “competitive certainty.”⁶

Despite its importance, certainty has proven to be somewhat elusive in recent years. There are essentially two reasons for this. First, as patented inventions are described with words, part of certainty’s elusive nature can be attributed to the inherent ambiguity of language.⁷ This ambiguity is especially acute in the world of ideas as it is much more difficult to describe the particulars of an abstract concept than it is the metes and bounds of Blackacre. It is not as if an inventor could post a sign on the boundary of his inventive front yard reading: “Private Property. Keep Out.” The second reason for certainty’s evasiveness is the generous exercise of judicial discretion, particularly on the part of the United States Court of Appeals for the Federal Circuit (“Federal Circuit”).⁸ The Federal

5. Rent-seeking has been defined as “the incentive to overproduce goods that promise a return greater than the cost of production (that is, an economic ‘rent’), and to the resulting waste when rents are transformed, through competition to obtain them, into costs.” RICHARD A. POSNER, *LAW AND LITERATURE: A MISUNDERSTOOD RELATION* 342 (1988) (parenthetical in original); see also Michael A. Sartori, *An Economic Incentives Analysis of the Jury’s Role in Patent Litigation*, 79 J. PAT. & TRADEMARK OFF. SOC’Y 331, 339 (1997).

Rent seeking occurs when innovators vie for the right to exclude and thereby compete for the ability to collect the economic rent. Rent seeking is deemed socially wasteful because in the “race for the patent” innovators spend more economic resources than is economically justifiable. Economic resources are wasted in research and development by competitors in the patent race duplicating investments and in patent litigation over issued patents.

Id. (citations omitted).

6. Although courts often speak of the patentee’s ability to exclude “others” from making and using his invention and the “public’s” need to know of its rights and limitations with respect to the patent grant, it is the competitors (i.e., persons of ordinary skill in the art) of the patentee whose interest is most immediately affected. Thus, I chose the term “competitive certainty” instead of, for example, “societal certainty.” See Giles S. Rich, *Foreword* to DONALD S. CHISUM ET AL., *PRINCIPLES OF PATENT LAW* iii (1998) (“The power of the federal courts is made available to patentees for the enforcement of this *right to exclude others*. Who are these ‘others’? Competitors, of course.”) (emphasis in original).

7. See, e.g., *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 396 (Ct. Cl. 1967) (“The very nature of words would make a clear and unambiguous [patent] claim a rare occurrence.”). See generally RICHARD J. BERNSTEIN, *BEYOND OBJECTIVISM AND RELATIVISM: SCIENCE, HERMENEUTICS, AND PRAXIS* (1983).

8. Others have written about the Federal Circuit’s excessive discretion as it relates to the on-sale bar and the doctrine of equivalents. See, e.g., Martin J. Adelman & Gary L. Francione, *The Doctrine of Equivalents in Patent Law: Questions That Pennwalt Did Not Answer*, 137 U. PA. L. REV. 673, 682 (1989) (“The doctrine of equivalents is the primary . . . cause of the current uncertainty surrounding the scope of patent claims.”); Joseph F. Hagg, *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.: An Equitable Solution to the Uncertainty Behind the Doctrine of Equivalents*, 80 MINN. L. REV. 1511, 1512 (1996) (“[The doctrine of equivalents] creates uncertainty for competitors as to what will or will not infringe a patent.”); Thomas K. Landry, *Certainty and Discretion in Patent Law: The On Sale Bar, The Doctrine of Equivalents, and Judicial Power in the Federal Circuit*, 67 S. CAL. L. REV. 1151, 1159 (1994) (“On sale doctrine is fraught with uncertainty and demonstrates the consequences of a failure

Circuit, which has exclusive subject matter jurisdiction over actions “arising under any Act of Congress relating to patents,”⁹ employs the broad de novo standard of review when engaging in claim interpretation¹⁰ and patent validity determinations,¹¹ thus permitting the court to second guess both the federal district courts¹² and the Patent and Trademark Office (“PTO”).¹³ As a result, the all-important notice function of the patent claim¹⁴ has been greatly diminished,

to recognize the value of having a rule.”); Victoria Slind-Flor, *Federal Circuit Judged Flawed*, NAT’L L.J., Aug. 3, 1998, at A1.

9. 28 U.S.C. § 1338(a) (1994); *see also id.* § 1295(a)(1) (conferring exclusive jurisdiction on the federal circuit for appeals from the district courts on claims under § 1338).

10. *See* Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc).

11. *See* Pfaff v. Wells Elecs., Inc., 124 F.3d 1429, 1436 (Fed. Cir. 1997) (“[B]oth on-sale and obviousness determinations are questions of law that we review de novo”); Richardson-Vicks Inc. v. Upjohn Co., 122 F.3d 1476, 1479 (Fed. Cir. 1997) (“It is black letter law that the ultimate question of obviousness is a question of law. And we review that legal question without deference to the trial court.”); Avia Group Int’l, Inc. v. L.A. Gear California, Inc., 853 F.2d 1557, 1561-62 (Fed. Cir. 1988) (stating patent “[v]alidity is a question of law”); Paperless Accounting, Inc. v. Bay Area Rapid Transit Sys., 804 F.2d 659, 664 (Fed. Cir. 1986) (stating the question of whether the specification is enabling is a question of law to be reviewed de novo).

12. *See, e.g.,* Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 1556 (Fed. Cir. 1995) (asserting that the court has the authority to “review the issue of claim interpretation independently without deference to the trial judge”).

13. Even though a patent is presumed valid under 35 U.S.C. § 282 (Supp. II 1996), a persuasive argument can be made that the presumption is procedural in nature, not substantive. *See* Fromson v. Advance Offset Plate, Inc., 755 F.2d 1549, 1555 (Fed. Cir. 1985) (“The presumption of validity under § 282 is a procedural device, placing the burden of proving invalidity on the party asserting it. It is not substantive law.”). As such, the presumption does not translate into substantive agency deference. *See* Solder Removal Co. v. United States Int’l Trade Comm’n, 582 F.2d 628, 633 & n.10 (C.C.P.A. 1978) (“Application of § 282 in its entirety has suffered from analogy of the presumption itself to the deference due administrative agencies.”). In the end, although stating that “[d]eference is due the Patent and Trademark Office decision to issue the patent with respect to evidence” that it considered, *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1360 (Fed. Cir. 1984), the court is anything but deferential to the PTO, *see, e.g., In re Zurko*, 142 F.3d 1447, 1448 (Fed. Cir. 1998) (en banc) (holding that the Administrative Procedure Act’s deferential “arbitrary and capricious” standard of review does not apply to the PTO’s factual determinations, rather, the clearly erroneous standard applies); *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

It is well established that the ultimate determination of obviousness is a question of law, which we review without deference to the Board’s [(i.e., Board of Patent Appeals and Interferences)] judgment. Therefore, it is our responsibility to make the final conclusion based on our reading of the record before us

Id. (citation omitted); *see also In re Brana*, 51 F.3d 1560, 1568 (Fed. Cir. 1995) (“Traditionally we have recited our standard of review to be, with regard to questions of law, that review is without deference to the views of the agency”).

14. *See* Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 33 (1997) (stating that “claims do indeed serve both a definitional and a notice function”); *McClain v. Ortmyer*, 141 U.S. 419, 424 (1891) (“The object of the patent law in requiring the patentee [to distinctly claim his invention] is not only to secure to him all to which he is entitled, but to apprise the public of what is still open to them.”); *Exxon Chem. Patents*, 64 F.3d at 1563 (Plager, J., concurring) (“The public generally, and in particular, the patentee’s competitors are entitled

despite the court's frequent assertions that the patent claim defines the patentee's property interest.¹⁵ I am not necessarily suggesting that the English language is more accessible to a district court or the PTO;¹⁶ rather, my point is institutional and temporal in nature in that by the time the question of validity reaches an Article III appellate (or even district) court it may be too late in terms of strategic business planning, commercial decisionmaking, and litigation costs.¹⁷ In short, patent owners, their competitors, and the public are being ill-served by not having

to clear and specific notice of what the inventor claims as his invention."); *Hoganas AB v. Dresser Indus.*, 9 F.3d 948, 951 (Fed. Cir. 1993) (stating the purpose of claims is "putting competitors on notice of the scope of the claimed invention"); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991) (What "the patentee and the Patent and Trademark Office have agreed constitute the metes and bounds of the claimed invention. Notice permits other parties to avoid actions which infringe the patent and to design around the patent.").

15. See, e.g., *Hoechst-Roussel Pharm. v. Lehman*, 109 F.3d 756, 759 (Fed. Cir. 1997) ("[T]he claims define the patent owner's property rights . . ."); *Berry Sterling Corp. v. Pescor Plastics, Inc.*, 122 F.2d 1452, 1454 (Fed. Cir. 1997) ("A properly conducted patent analysis, be it for infringement or validity, necessarily requires construing the patent, and more specifically, the claim."); *General Foods Corp. v. Studiengesellschaft Kohle*, 972 F.2d 1272, 1274 (Fed. Cir. 1992) ("It is to the claims of every patent . . . that we must turn when we are seeking to determine what the invention is, the exclusive use of which is given to the inventor by the grant provided for in the statute,—“He can claim nothing beyond them.””) (quoting *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 510 (1917) (omission added) (quoting in turn *Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274 (1877))).

16. Although, the PTO does have technical expertise and is presumably more familiar with the various technological practices. Every patent examiner possesses a technical undergraduate degree and many have doctorates in their respective disciplines. The examiners must also graduate from the Patent Academy; and the judges sitting on the Board of Patent Appeals and Interferences are, as required by statute, not only technically proficient, but have law degrees as well. See 35 U.S.C. § 7(a) (1994). See generally Harold C. Wegner, *Patent Simplification Sans Patent Fraud*, 20 AIPLA Q.J. 211, 218 (1992) ("The new patent examiner of the 1990's comes to the PTO in many ways a step ahead of his or her counterpart from twenty-five years ago. In biotechnology, for example, the typical new examiner probably has an advanced degree, and many have Ph.D's.").

17. See *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1475 (Fed. Cir. 1998) (Radar, J., dissenting).

From [a] patent practitioner's standpoint, this court's enthusiastic assertion of its unfettered review . . . has the potential to undercut the benefits of *Markman I*. *Markman I* potentially promised to supply early certainty about the meaning of a patent claim. This certainty, in turn, would prompt early settlement of many, if not most, patent suits. Once the parties know the meaning of the claims, they can predict with some reliability the likelihood of a favorable judgment, factor in the economics of the infringement, and arrive at a settlement to save the costs of litigation.

Id. (discussing *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*Markman I*)); see also Adelman & Francione, *supra* note 8, at 682 ("[U]ncertainty about the scope of patent protection hinders both patent holders and potential defendants from assessing the possible outcome of litigation or from making other business decisions . . .").

resolution of proprietary and competitive certainty until so late in the “sterile enterprise of litigation.”¹⁸

A patent system, like any rights-based system, should seek to provide the players operating within the system clearly defined guidance as to what is and is not acceptable behavior. In our patent system, the patent claim is the principal guidepost, the boundaries of which, importantly, should be established as early and as clearly as possible. But, how is early certainty accomplished? There isn't much one can do to combat the ambiguity of language. We must accept it and work within its framework.¹⁹ On the other hand, judicial discretion is within our control. But limiting *judicial* discretion does not eliminate discretion entirely. That is, discretion must reside at some level; the question is, where. One viable option is for the court to repose a greater degree of trust in the PTO's decisionmaking process. In this vein, I have argued elsewhere that the Federal Circuit and district courts should provide more deference to the patentability decisions of the PTO.²⁰ In order for this to happen, however, the players in the patent game must have confidence in the PTO's decisionmaking ability. The patent application process is a non-adversarial *ex parte* proceeding.²¹ As such, one can argue that excessive judicial discretion and the lack of confidence of the patent bar (or at least some in the patent bar) in the PTO are a result of the ex

18. *Litton Sys., Inc. v. Honeywell, Inc.*, 87 F.3d 1559, 1580 (Fed. Cir. 1996) (Bryson, J., concurring). Indeed, since 1980, “the number of [patent] cases coming to resolution at the District Court level has risen in an almost linear fashion.” Eugene R. Quinn, Jr., *Using Alternative Dispute Resolution to Resolve Patent Litigation: A Survey of Patent Litigators*, 3 MARQ. INTELL. PROP. L. REV. (forthcoming 1999) (manuscript at 3, on file with author).

19. Of course, I do not mean to suggest that those who draft patent applications are helpless. As a general matter, one can argue that patent litigation is, at least in part, a result of inept claim drafting and myopic written descriptions. *See, e.g., ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1583 (Fed. Cir. 1988) (Nichols, J., dissenting). Referring to claim drafting, Judge Nichols wrote in dissent that “[w]e are up against what we must realistically consider a growing inability of speakers and writers, lawyers, technicians, and laymen, to say what they intend to say with accuracy and clarity.” *Id.*

20. *See* Craig Allen Nard, *Deference, Defiance, and the Useful Arts*, 56 OHIO ST. L.J. 1415 (1995) [hereinafter Nard, *Deference, Defiance*]; Craig Allen Nard, *Legitimacy and the Useful Arts*, 10 HARV. J.L. & TECH. 510 (1997).

21. *See* 35 U.S.C. §§ 131-134 (1994). The patent code does provide for an adversarial *inter partes* proceeding with respect to interferences (i.e., the process by which the PTO determines who is entitled to a patent as between two or more patent applicants claiming the same subject matter). *See id.* § 135.

parte nature of the patent prosecution process,²² whereby the PTO and the patent applicant enter into a contract with, almost invariably, incomplete knowledge of extant prior art.²³ This ex ante knowledge problem has led to the invalidation of patents several years after issuance based on prior art that was not before the PTO. In fact, several empirical studies have shown that the chances of invalidating a patent during litigation are considerably greater if the challenger cites prior art that was not considered by the PTO.²⁴

This Article is concerned with how to fill this knowledge vacuum and restore the patent claim to its rightful place.²⁵ As such, this Article proposes the implementation of a post-grant opposition proceeding in the PTO where in a third party, in an *inter partes* setting, may challenge the issuance of a patent.²⁶ By providing third parties with the opportunity to challenge the issuance of a patent,

22. See, e.g., Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 21 (1989).

[T]he courts were properly influenced by the fact that patent prosecutions are largely ex parte, with the applicant in a superior position to the PTO examiner with respect to the information needed to determine patentability. Perhaps fearing that they lacked the tools to control the quality of operations within the PTO, and that therefore patents were sometimes improvidently granted, the regional circuits gave little deference to its decisions.

Id.; *Lorenz v. F.W. Woolworth Co.*, 305 F.2d 102, 105 (2d Cir. 1962) (“This court has recognized the unavoidable obstacles to an accurate and impartial decision that are inherent in *ex parte* proceedings in the patent office.”).

23. See Gerald Sobel, *Examining the Extra Burden Imposed on a Patentee Who Seeks a Preliminary Injunction*, 32 AM. U. L. REV. 985, 996 n.69 (1983) (“The allegations of inadequacies in the ex parte process at the Patent Office derive from the view that the Patent Office is deluged with applications and, accordingly, is unable to give full consideration to the prior art references or to demand full disclosure of all relevant information in each proceeding.”); *infra* text accompanying notes 35-38.

24. See John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185 (1998); see also GLORIA K. KOENIG, PATENT INVALIDITY: A STATISTICAL AND SUBSTANTIVE ANALYSIS § 5.05[4] (rev. ed. 1980) (examining 150 patents found invalid from 1953 to 1967) (“[The] proportion of invalid patents wherein uncited prior art [(i.e., prior art not considered by the PTO during prosecution)] figured into the result is between 66 and 80 percent.”). See also P.J. Federico, *Adjudicated Patents, 1948-54*, 38 J. PAT. OFF. SOC’Y 233 (1956), where Federico studied patent validity results during the years 1948-54 and found that parties challenging the validity of patents during litigation had more success when they relied upon prior art that was not considered by the PTO during prosecution.

25. I should make clear at this point that this Article does not set forth a theory of claim interpretation. That project is for another day. What I do wish to address is how and why we can provide the PTO and patent applicant with more information (“prior art”) during patent prosecution.

26. It is not my intention here to discuss the particulars of an opposition proceeding. The Europeans and Japanese have opposition proceedings and the details of such can be gleaned rather easily. My goal is to offer an economic and empirical justification for such a proceeding. For a discussion of opposition proceedings in foreign countries, see Symposium, *Opposition Systems*, 4 AIPLA Q.J. 92, 104-321 (1976). See also RAPH LUNZER, SINGER: THE EUROPEAN PATENT CONVENTION, 462-80 (rev. ed., Sweet & Maxwell Ltd. 1995); GERALD PATERSON, THE EUROPEAN PATENT SYSTEM: THE LAW AND PRACTICE OF THE EUROPEAN PATENT CONVENTION 188-231 (1992).

an opposition proceeding would go a long way toward imposing proprietary and competitive certainty *ex ante*.²⁷ While the suggestion that the United States adopt an opposition proceeding is not novel,²⁸ the theoretical and empirical justificatory foundations that I explore in this Article have not, to my knowledge, been discussed in the context of administrative procedure.

Thus, it is time we take a fresh look at the opposition proceeding, especially in the light of (1) recent legislative attempts that would compel the PTO to publish patent applications eighteen months after the application is filed,²⁹ which some suspect is a precursor to the enactment of an opposition proceeding; (2) notable empirical scholarship, particularly a recent study done by Paul Allison and Mark Lemley, demonstrating that “most” of the prior art references cited during litigation in support of invalidation are references that were not considered by the PTO during prosecution, *and* in cases where patents were in fact invalidated, the party challenging validity “disproportionately relied upon” prior art that was not considered by the PTO;³⁰ and (3) an original empirical study that I conducted of over 700 federal district court judges, the results of which demonstrate that the

27. Patent applications are not publicly accessible. *See* 35 U.S.C. § 122 (1994). Therefore, with limited exceptions, third parties are unable to challenge the issuance of a patent. The exceptions are “public use proceedings” and a “protest.” These proceedings allow a third party to submit to the PTO prior art or information about public use or on-sale activities and explain to the PTO why a patent should not issue. With respect to a protest, the third party, after submitting the prior art, is not permitted to communicate further with the PTO. A public use proceeding involves briefing and testimony. *See* 37 C.F.R. §§ 1.291-.292 (1997). Needless to say, because patent applications are held in confidence, protests and public use proceedings are rare.

28. In fact, a proposal for an opposition type proceeding in the United States can be traced back to 1936. *See* Science Advisory Bd., *Report of the Committee on the Relation of the Patent System to the Stimulation of New Industries*, 18 J. PAT. OFF. SOC’Y 94, 97-99 (1936). In 1995-96, the American Intellectual Property Law Association and the Intellectual Property Section of the American Bar Association adopted resolutions which recommended that the United States implement an opposition proceeding. Professor Harold Wegner has also been an outspoken advocate of an opposition proceeding. Harold C. Wegner, *Patent Law Simplification and the Geneva Convention*, 14 AIPLA Q.J. 154, 200-01 (1986); Wegner, *supra* note 16, at 220. For a discussion of the various administrative proposals in American patent law that have been made throughout the years, see Mark D. Janis, *Rethinking Reexamination: Toward a Viable Administrative Revocation System for U.S. Patent Law*, 11 HARV. J.L. & TECH. 1 (1997); Allen M. Soobert, *Breaking New Grounds in Administrative Revocation of U.S. Patents: A Proposition for Opposition—and Beyond*, 14 SANTA CLARA COMPUTER & HIGH TECH. L.J. 63 (1998).

29. Section 202 of Senate Bill 507 would amend 35 U.S.C. § 122 to read, “[E]ach application for patent . . . shall be published, in accordance with procedures determined by the Commissioner, as soon as possible after the expiration of a period of 18 months from the earliest filing date for which a benefit is sought under this title.” *See* S. 507, 105th Cong. § 202 (1997) (Although Senate Bill 507 was tabled in 1998, it will most likely be reintroduced in 1999.); *see also* THE ADVISORY COMMISSION ON PATENT LAW REFORM: A REPORT TO THE SECRETARY OF COMMERCE 61-62 (Aug. 1992).

30. Allison & Lemley, *supra* note 24, at 233.

number of judges who favor an opposition proceeding outnumber those who oppose such by more than two to one.³¹

I argue for the establishment of an opposition proceeding based upon both a theoretical foundation and the aforementioned empirical studies. The theoretical foundation is broken down into two components: (1) economic entitlement theory;³² and (2) contract theory.³³ With respect to the former, the attractiveness of an opposition proceeding is apparent when one considers that patent rights are best viewed as property rule entitlements. Early certainty and a strong property rule (with the power of the injunction in its remedial arsenal) go hand in hand, as a sense of security in one's property interest is fundamental. An opposition proceeding breeds intimacy with the claimed invention and will facilitate greater accuracy in private valuation because, as the prior art picture becomes more complete during prosecution, the more informed the parties will be with respect to the boundaries of the claimed invention.³⁴ In short, prior art furnishes the bricks for the patentee's fence.

Once it is understood that a patent is best viewed as a property rule entitlement, we must next examine when and under what circumstances this entitlement may be invalidated. This brings us to the second aspect of my theoretical foundation—consensual contract theory. Freedom of contract is firmly embedded in American jurisprudence. Generally, freedom of contract can be broken down into freedom *to* contract and, more importantly, freedom *from* contract.³⁵ The latter “holds that transfers of property rights [(e.g., a patent)] should not be imposed upon them without their consent.”³⁶ To put this concept in the context of patent law, the process whereby one obtains a patent is comparable to a contract negotiation between the patent applicant and the PTO, as representative

31. See *infra* Appendix. Under 28 U.S.C. § 1338, federal district courts have “original jurisdiction of any civil action arising under any Act of Congress relating to patents, plant variety protection, copyrights and trade-marks. Such jurisdiction shall be exclusive of the courts of the states in patent, plant variety protection and copyright cases.” 28 U.S.C. § 1338(a) (1994).

32. See *infra* Part II.

33. See *infra* Part III.

34. See, e.g., *Autogiro Co. of America v. United States*, 384 F.2d 391, 399 (Ct. Cl. 1967) (“In its broader use as source material, the prior art cited in the file wrapper gives clues as to what the claims do not cover.”); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996) (“[P]rior art can often help to demonstrate how a disputed term is used by those skilled in the art.”).

35. See Randy E. Barnett, *The Sound of Silence: Default Rules and Contractual Consent*, 78 VA. L. REV. 821, 840 (1992).

36. *Id.* at 841.

of the public, including the patent applicant's competitors.³⁷ Consider the following simple example:

A patent applicant conducts a prior art search and submits his findings to the PTO, which also conducts a search. The PTO initially rejects the applicant's claimed invention based on some of the prior art references. After amending his patent application (e.g., narrowing some of his patent claims), the patent is granted. Several years later, during litigation, the patent is invalidated by an Article III court based on prior art *not* considered by the PTO.

Can one argue that to invalidate the patent is to deny the patentee freedom from contract? That is, the invalidating prior art was never part of the original bargain, and to invalidate the patent *ex post* is an imposition of unbargained for contractual terms ultimately leading to the transfer (i.e., invalidation) to the public domain of the patentee's property interest without his consent. If the patentee were aware of the prior art, he would likely have bargained around it by amending his claims or perhaps a patent would not have issued at all. At the same time, however, we must recognize that an equal injustice would be visited upon the public, particularly the patentee's competitors, if the court did not invalidate patents that never should have issued. Thus, there exist competing policy concerns. The question is: To what extent can an opposition proceeding address this dilemma?

37. As one court explained:

A patent is a contract between the inventor and the public, the terms of which are formulated by the United States Patent Office. The inventor in such a contract gives as a consideration to the public a new and useful art, machine or composition of matter, and, in return, the public gives as a consideration to the inventor a monopoly expressed by the claims of the patent of a period limited by statute to 17 years [(now 20 years from date of filing)], after which such monopoly expires and becomes dedicated to the public.

Davis Airfoils, Inc. v. United States, 124 F. Supp. 350, 352 (Ct. Cl. 1954); *see also* Fried. Krupp Aktien-Gesellschaft v. Midvale Steel Co., 191 F. 588, 594 (3d Cir. 1911).

[A]n American patent is a written contract between an inventor and the government. This contract consists of mutual, interrelated considerations moving from each party to the other for such contract. The consideration given on the part of the inventor to the government is the disclosure of his invention in such plain and full terms that any one skilled in the art to which it appertains may practice it. The consideration on the part of the government given to the patentee for such disclosure is a monopoly for 17 years [(now 20 years from date of filing)] of the invention disclosed to the extent of the claims allowed in the patent.

Id.; *see also* 1 WILLIAM C. ROBINSON, THE LAW OF PATENTS 23-24 (1890).

The right of the inventor to his exclusive privilege, in return for the benefit conferred by him upon the public, being once conceded, the idea that his letters-patent created a contract between him and the people naturally followed. This idea seems to have been first suggested by Lord Eldon who, in a case decided in A.D. 1800, stated that a patent was a bargain with the public and was to be construed on the same principles of good faith by which all other contracts were controlled.

Id. It should be noted the Federal Circuit has also suggested that a patent is comparable to a statute. *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 985-87 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996).

All contracts are incomplete to a certain extent. This incompleteness is due largely to a lack of knowledge *ex ante*. With respect to patent prosecution, this lack of knowledge is in the form of undiscovered prior art. An opposition proceeding is a way to enhance the information base of a patentability determination by allowing third parties to submit to the PTO material prior art. Such a proceeding recognizes the localized nature of technical information, information that is, for all practical purposes, inaccessible.³⁸ By enhancing the amount of technical information before the PTO during patent prosecution, not only will there likely be greater proprietary and competitive certainty *ex ante*, but, the resulting patent claims will more accurately reflect the consent of the parties.

Early certainty brought about by an opposition proceeding will (1) provide the patentee with a greater degree of proprietary security, which in turn will facilitate the commercialization of the claimed invention; and (2) spur the patentee's competitors (i.e., persons of ordinary skill in the art) to either (a) enter into informed licensing negotiations with the patentee (both the patentee, armed with a potential injunction, and his competitors will be informed negotiators, which may have the effect of reducing transaction costs associated with licensing thereby encouraging the parties to reach an agreement);³⁹ (b) attempt to improve upon the patented invention;⁴⁰ or (c) design around the patented invention.⁴¹ With respect to (b) and (c) in particular, the competitor, having competitive certainty *ex ante* (or at least knowledge that a patent may issue), may terminate wasteful duplicative research efforts⁴² and proceed to improve upon or design around the claimed invention with a significantly reduced amount of fear that usually accompanies such efforts.⁴³ In addition, the patentee is likely to be somewhat less

38. *See infra* notes 123-31.

39. *See* Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247, 256 (1994). Of course, transaction costs will still be somewhat of an obstacle, but one can argue that, with an opposition proceeding in place coupled with a property rule entitlement, such costs would pose less of a burden on the parties to the transaction. This is primarily due to the early notice function of publication and the familiarity that the parties will have with respect to the value of the claimed invention. In that regard, a property rule, as opposed to a liability rule, strengthened by an opposition proceeding permits the parties involved, not the state, to assess the value of the patent.

40. *See infra* Part IV.A.

41. *See infra* Part IV.B.

42. *See* Dam, *supra* note 39, at 264.

The patent issuance system itself has the effect of transmitting knowledge that a new patent has been issued and that, the scope of the new invention having been captured, R & D of other firms can be terminated. . . .

. . . .
 . . . [R]ules favoring early applications for patents tend to reduce rent seeking by inducing early elimination or redirection of R & D by rival firms on issuance. *Id.*; *see also* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 269-70 (1977).

43. With respect to an improver, the prospect of a secure patent is essential as it arms him with much needed bargaining power. The reason for this is that an improver is usually also an infringer, and without a patent, he is an infringer without bargaining power. At least with a patent, the improver can presumably offer the original patent holder something of value with an eye towards a cross-licensing arrangement. *See infra* notes 148-49.

apprehensive about the validity of its patent and the prospect of a court determined damage assessment. In contrast, faced with a liability rule and uncertainty, competitors may opt to infringe and pay later, most likely an amount that undercompensates the patentee; or, fearful of standing upon shoulders greased by uncertainty, channel their inventive energies to an unrelated technological field.⁴⁴

In addition to the theoretical justification for an opposition proceeding, there are two empirical justifications. First, Lemley and Allison have shown that (1) “most” of the prior art references asserted during litigation in support of invalidation are references that were not considered by the PTO during prosecution; (2) in cases where patents were in fact invalidated, the party challenging validity “disproportionately relied upon” art that was not considered by the PTO; and (3) “[t]he probability of invalidity based on uncited art was 40.8%, while the probability of invalidity based on cited art was 29.6%.”⁴⁵ Allison and Lemley conclude that their data “indicate with a fair degree of confidence that reliance on uncited art [(i.e., prior art not considered by the PTO)] was more likely to lead to a finding of invalidity than reliance on cited art.”⁴⁶

Second, I asked 726 federal district court judges whether or not they favored the implementation of a post-grant opposition proceeding.⁴⁷ Of the 726 judges surveyed, 204 (or 28%) responded. Of the 204 judges who responded, 93 (or 46%) favored the implementation of a post-grant opposition proceeding.⁴⁸ Forty-five (or 22%) disfavored such a proceeding, and 66 (or 32%) had no opinion. A majority of the judges who favored an opposition proceeding cited diminution in litigation and conservation of judicial/client resources as reasons for their position. Other reasons given for supporting an opposition proceeding were institutional competence and interpretive assistance in terms of patentability

44. Indeed, a competitor will most likely visit his attorney before manufacturing a competing product. The attorney will study the claims of the patent and render advice accordingly. As Louis Kaplow writes:

Uninformed individuals act based on their best guess about how the law will apply to their contemplated conduct. Informed individuals act based on actual knowledge of the law. Thus, informed individuals might be deterred from conduct they would have undertaken if they had remained uninformed, which can occur when they learn that such conduct is illegal or subject to a higher sanction than they otherwise would have expected. Or, informed individuals might choose to undertake acts they would have been deterred from committing if they had remained uninformed. Both possibilities are of value to individuals. The value of advice, then, is simply the value of each possibility weighted by the likelihood of its occurrence.

Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557, 571 (1992) (footnote omitted).

45. Allison & Lemley, *supra* note 24, at 234. The probability of an invalidity figure (29.6%) for prior art considered by the PTO is also high, suggesting that Article III courts are employing a broad standard of review. See Nard, *Deference, Defiance*, *supra* note 20, at 1504.

46. Allison & Lemley, *supra* note 24, at 234.

47. See *infra* Appendix.

48. See *infra* notes 176-78 for representative responses.

determinations, generally, and claim construction, specifically. With respect to those judges who disfavored an opposition proceeding,⁴⁹ their primary concern was the potential for abusive and dilatory tactics on the part of the opposers as well as the somewhat related notion of increasing the level of administrative procedural complexity. The judges who gave no opinion indicated that they lacked patent law experience and were ill-informed on the issue.⁵⁰

In Part II of this Article, I explore the economic literature pertaining to legal entitlement theory as applied to the patent right. I discuss, initially, why an entitlement is needed, and then proceed to ask whether patent rights are best viewed as property rule or liability rule entitlements. Having concluded, like others have,⁵¹ that patent rights should be property rule entitlements, I explore in Part III notions of contract theory, namely consent theory, and discuss why an opposition proceeding fits nicely within a property rule framework. In Part IV, I address the role of certainty and incentive in our patent system, particularly as certainty relates to incentive-to-improve theory and incentive-to-design-around theory. Throughout this discussion, one must keep in mind the underlying empirical foundation that supports my theoretical argument for an opposition proceeding.

II. PROPERTY RULES AND THE USEFUL ARTS

A. Why an Exclusive Property Right Is Needed

In his seminal work, R.H. Coase taught us that in a world free of transaction costs the initial allocation of legal entitlements is irrelevant in terms of efficiency as the entitlement will wind up, through a voluntary transaction, in the hands of the party who values it the most.⁵² According to Coase, when externalities exist,⁵³ the assignment of legal entitlements will have no effect on the use of the resource because, when there are no transaction costs, the parties will come together and optimally adjust resource use. The Coase Theorem, as it is known, is readily applicable to intellectual property.⁵⁴ Consider the following example:

49. See *infra* notes 181-83 for representative responses.

50. See *infra* text accompanying note 174.

51. See, e.g., Roger D. Blair & Thomas F. Cotter, *An Economic Analysis of Damages Rules in Intellectual Property Law*, 39 WM. & MARY L. REV. 1585 (1998); Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655 (1994).

52. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 1-15 (1960); see also Robert D. Cooter, *Coase Theorem*, in THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS 457 (John Eatwell et al. eds., 1987) (“[T]he Coase Theorem can be regarded as stating that *the initial allocation of legal entitlements does not matter from an efficiency perspective so long as the transaction costs of exchange are nil.*”) (emphasis in original).

53. An externality may be defined as a cost or benefit imposed on a third party through actions or transactions.

54. See JOHN W. SCHLICHER, PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES § 2.04 (1995).

The implication of Coase’s theorem for information production is straightforward. If the law permits users to use freely the information they learn from others, it will

Inventor *A* patents a pharmaceutical drug XYZ and values this composition at \$100. Competitor *B* values the composition at \$1,000 (perhaps *B* can make the drug less expensively). Under the Coase Theorem, *B*'s product will reach the market irrespective of whether *A* has a patent. If *A* does have a patent, *B* will negotiate a license with *A* (somewhere between \$101 and \$999); if *A* does not have a patent, a license is not necessary and *B* can simply produce and market XYZ.

However, as Guido Calabresi and A. Douglas Melamed argued, “[f]or this to hold, ‘no transaction costs’ must be understood extremely broadly as involving both perfect knowledge and the absence of any impediments or costs of negotiating.”⁵⁵ In practice, of course, there are always transaction costs, as Coase himself acknowledged.⁵⁶ This is particularly true in the world of patent law. Without a proprietary interest, the transaction costs associated with excluding third parties from profiting by one’s inventive concept would be extremely high due to the free rider problem, which in turn, would have an adverse impact on patent law’s incentive based dynamic.⁵⁷

For instance, an inventor without access to a patent faces what economists call Arrow’s Information Paradox.⁵⁸ Imagine the example of

a small inventor in a world without patents, tinkering away in a garage or basement workshop before coming upon an invention with large commercial potential. Imagine further that large capital investment is required before mass production can be accomplished. Lacking this capital, and most likely the experience and resources necessary to advertise, distribute, and sell large quantities as well, the small inventor must find a buyer (or investor) for the inventive concepts. Perhaps the inventor approaches the leading producer of related products; or perhaps the inventor shops for venture capital by going door-to-door on Wall Street. Any potential buyer, of course, will not pay a high price, or perhaps any price at all, unless sufficient details are disclosed. The inventor, however, does not want to disclose too much, for fear the would-be buyer will instead become an independent producer of the invention’s commercial embodiment, and a competitor of the true inventor.^[59] The inventor’s paradox may be solved by a patent, which gives

be in the interest of users and producers to agree that the producer will make it and users will pay him to do so. If the transaction costs are zero, those agreements will lead to precisely the right amounts and types of information being produced.

Id.

55. Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1094-95 (1972).

56. See Coase, *supra* note 52, at 15 (“The argument has proceeded up to this point on the assumption . . . that there were no costs involved in carrying out market transactions. This is, of course, a very unrealistic assumption.”).

57. See *infra* notes 141-71.

58. See Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609, 615 (Nat’l Bureau of Econ. Research ed., 1962).

59. In discussing Arrow’s Information Paradox, Robert Merges writes, “[T]o sell, one must disclose the information, but once the information is disclosed, the recipient has it and need not buy it. On the other hand, if one does not disclose anything the buyer has no idea what is for sale.” Robert P. Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75, 81 (1994).

the inventor the freedom to disclose without fear of self-induced competition.⁶⁰

Arrow's Information Paradox is due largely to certain features that are shared by all forms of information. Information or knowledge is a special type of economic good often called a public good,⁶¹ as distinct from so-called private goods. Public goods have two characteristics: they are (1) *inexhaustible* and (2) *nonexcludable*. A good is inexhaustible if consumption by one person does not leave any less of the good to be consumed by others. As Thomas Jefferson wrote, in a letter to Isaac McPherson, "He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me."⁶² In microeconomic terms, a good is inexhaustible if for any given level of production, the marginal cost of providing it to an additional consumer is zero. A good is nonexcludable if people cannot be excluded from consuming it. Without a proprietary interest, for example, how does an inventor or poet exclude another from using his idea or poem? The transaction costs associated with excluding or negotiating with third parties are unbearable.⁶³

The two distinctive features of public goods—inexhaustibility and nonexcludability—suggest that public goods will tend to be under produced, if produced at all, by the market. Indeed, public goods present a special type of problem called the free rider problem. If a public good is offered for sale, consumers will have a strong incentive to under represent their personal value for the good, and thereby attempt to pay a low, or no, price for the good.⁶⁴ Consider the example of a neighborhood watch program:

If a door-to-door collection is undertaken to raise money for the uniforms, flashlights, and communication devices necessary for the program, each resident will have the incentive to pay less than a simple pro-rata share knowing that he will benefit from the program equally whether he pays or not. One can now see why public goods are viewed as a type of market

60. CHISUM ET AL., *supra* note 6, at 58 (parenthetical in original).

61. In addition to information, other public goods include national defense, television signals, and police protection.

62. Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), in THOMAS JEFFERSON WRITINGS 1286, 1291-92 (Merrill D. Peterson ed., 1984); *see also* Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 995 (1997) ("To adapt an old parable, if I give you a fish, I no longer have it, but if I teach you to fish, you or I can teach a hundred others the same skill without appreciably reducing its value.").

63. *See* SCHLICHER, *supra* note 54, § 2.05 ("With high transaction costs and bargaining problems, it is unrealistic to expect . . . agreements between producers and users of information to correct adequately for externalities in information production.").

64. *See id.*

The producer cannot guarantee that only users who are parties to the agreement will have access to the information. The information may become available to non-parties. Each potential user may believe that enough other people will cooperate to produce it without his help. He may decide not to contribute and hope to enjoy the information for free. He will hold out and hope to free ride on the contribution of others.

Id.; *see also* F.M. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 444 (2d ed. 1980).

failure.^[65] To ensure that an optimal amount of public goods are produced, governments typically intervene in at least one of several ways. A government, funded with tax dollars, may produce the good itself, as with police protection and national defense. A government may also subsidize private production, as with biotechnology research and development.^[66] Alternatively, a government may attempt to create a market for the good by establishing new forms of property rights in things related to the good. Patents are often considered to be one such form of intervention.⁶⁷

B. Patent Rights as Property Rule Entitlements

With an understanding of why an entitlement is needed in the form of a patent, we must now turn to the work of Calabresi and Melamed.⁶⁸ Whereas Coase taught us that transaction costs determine who should own the legal entitlement, Calabresi and Melamed explained why some legal entitlements should be protected by a property rule and others by a liability rule. Calabresi and Melamed distinguish between property rules and liability rules as ways to protect legal entitlements. A property rule will permit a non-owner to appropriate the entitlement only if the non-owner first obtains permission from the entitlement holder. Thus, the entitlement holder has the right to exclude and may keep his entitlement unless he voluntarily decides to part with it. The classic property rule remedy or sanction is the injunction. On the other hand, a liability rule entitlement permits a non-owner to take the entitlement and thereafter compensate the entitlement holder if forced to do so. Importantly, compensation under a liability rule is determined by the state (e.g., a court or legislature) rather than the entitlement holder in a quasi-market setting.⁶⁹

65. For an explanation of this statement, see OFFICE OF TECH. ASSESSMENT, U.S. CONGRESS, FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY AND THE CHALLENGE OF TECHNOLOGICAL CHANGE 185 (1992) [hereinafter TECH. ASSESSMENT REPORT].

Indeed, individuals have an incentive not to pay for the good, or to undervalue it, in hopes of getting access as "free riders." The inability to exclude free riders distorts market signals and is thought to result in inefficient allocation of resources to nonexclusive goods and underproduction of them, relative to socially optimal quantities.

Id. For a more detailed discussion of public goods and the market failures associated with them, see BRIAN R. BINGER & ELIZABETH HOFFMAN, MICROECONOMICS WITH CALCULUS 562-84 (2d ed. 1998); ROBERT D. COOTER & THOMAS S. ULEN, LAW AND ECONOMICS 46-49, 108-12, 135-41 (1988); ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 617-41 (2d ed. 1992).

66. Indeed, some commentators have suggested that instead of patents, the government should award prizes to encourage invention. See Michael Polanyi, *Patent Reform*, 11 REV. ECON. STUD. 61, 65 (1944).

67. CHISUM ET AL., *supra* note 6, at 59; see also TECH. ASSESSMENT REPORT, *supra* note 65, at 185 ("In granting a limited monopoly through copyright or patent, the government attempts to compensate for distortions arising from nonexclusivity [of public goods].").

68. See Calabresi & Melamed, *supra* note 55.

69. According to Calabresi and Melamed:

An entitlement is protected by a property rule to the extent that someone who wishes to remove the entitlement from its holder must buy it from him in a voluntary transaction in which the value of the entitlement is agreed upon by the seller. It is the form of entitlement which gives rise to the least amount of state

In the light of transaction costs and the desire to minimize such, individual legal systems must choose, for the most part, between a liability rule and a property rule with an understanding of their respective consequences.⁷⁰ It has been argued that in the absence of a holdout problem, property rules are preferred over liability rules.⁷¹ The primary concern with a liability rule pertains to valuation because the entity charged with valuing the asset in question is the state. Thus, the risk of under compensation is significant for no other reason than the state simply is not as familiar with the asset as its owner. In the end, therefore, “[t]he overarching theme,” according to Richard Epstein, “is to find that legal rule that minimizes the sum of the costs associated with extraction and under compensation, the signature risks of property rules and liability rules respectively.”⁷²

This leads us to the following question: Are patent rights (or intellectual property rights in general) best viewed as property rule or liability rule entitlements? Initially, it should be noted that the foremost remedy available for a patent owner is the injunction,⁷³ which has the effect of enticing the patentee

intervention: once the original entitlement is decided upon, the state does not try to decide its value. It lets each of the parties say how much the entitlement is worth to him, and gives the seller a veto if the buyer does not offer enough. . . .

Whenever someone may destroy the initial entitlement if he is willing to pay an objectively determined value for it, an entitlement is protected by a liability rule. This value may be what it is thought the original holder of the entitlement would have sold it for. But the holder’s complaint that he would have demanded more will not avail him once the objectively determined value is set. Obviously, liability rules involve an additional stage of state intervention: not only are entitlements protected, but their transfer or destruction is allowed on the basis of a value determined by some organ of the state rather than by the parties themselves.

Id. at 1092 (footnote omitted).

70. See Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 *YALE L.J.* 2091, 2092 (1997) (“[O]ur world is not one in which transaction costs are zero. Rather, they are positive and large, so that the choice between the two rules is certain to have major consequences for the overall operation of any legal system.”).

71. See *id.* at 2092 (“The standard practice in virtually all legal systems assumes the dominance of property rules over liability rules, except under those circumstances where some serious holdout problem is created because circumstances limit each side to a single trading partner.”). As a patent provides its owner with the right to exclude third parties from making, using, or selling the patented invention, a holdout situation is a concern, particularly when a competitor wishes to improve upon the claimed invention and needs to use the invention in its research. See *infra* notes 147-49.

72. Epstein, *supra* note 70, at 2095.

73. See 35 U.S.C. § 283 (1994).

and his competitors to the bargaining table.⁷⁴ In this sense, a patent is a quintessential property rule entitlement.

Furthermore, a strong argument can be made that patent rights are best viewed as property rule entitlements⁷⁵ because of the difficulty the state has in accurately valuing a patent, especially since a patented invention is unique (i.e., novel and nonobvious).⁷⁶ According to Calabresi and Melamed, when transaction costs are high and valuation is straightforward, a liability rule governs. In contrast, a property rule applies where transaction costs are low (e.g., prospect of a holdout is low) and valuation is difficult for the court.⁷⁷ In this regard, the patentee and his competitors are more adept at valuation, particularly when competitor intimacy with the claimed invention is facilitated by participation in an opposition proceeding.

However, one can argue that regardless of transaction costs, a property rule is appropriate in the light of two fundamental economic theories of patent law, namely the incentive-to-design-around and incentive-to-improve theories.⁷⁸ That is, despite familiarity with the claimed invention, the patentee and a license-seeking competitor may simply fail to come to terms.⁷⁹ In such a case, the competitor may decide to design around the patented invention or, at the very least, improve upon such.⁸⁰ By forcing the competitor's hand, so to speak, the

74. See Dam, *supra* note 39, at 256.

[S]ince a patentee may seek an injunction, including a preliminary injunction pending trial, the patentee will normally be able to bring an infringer to the bargaining table where the parties will have an incentive to agree to license or even assign the patent right to the infringer if he can more efficiently exploit the patent.

Id.

75. By suggesting that patent rights are best viewed as property rule entitlements, I am not asserting what the breadth of claim scope should be for any given patent in terms of encouraging optimal innovation. For competing views on optimal claim scope, see Kitch, *supra* note 42, at 265, and Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 *passim* (1990).

76. See Merges, *supra* note 59, at 78.

[A] property rule makes sense for patents because . . . a court setting the terms of the exchange would have a difficult time doing so quickly and cheaply, given the specialized nature of the assets and the varied and complex business environments in which the assets are deployed. Hence, the parties are left to make their own deal.

Id.

77. Calabresi & Melamed, *supra* note 55, at 1106-10; see also Merges, *supra* note 51, at 2664.

78. See *infra* Parts IV.A, IV.B.

79. See *infra* notes 144-45.

80. In the context of collective rights organizations, it has been argued that in the face of high transaction costs, there exist built-in mechanisms within a property rule system that allow the parties to reduce transaction costs and allocate rights to the highest valued entity. See Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293, 1316-17 (1996); see also Merges, *supra* note 51, at 2655 (“[P]roperty rules can and do work effectively in many situations involving [intellectual property rights (“IPRs”)]. This is so because, in the presence of high transaction costs, industry participants have an incentive to invest in institutions that lower the costs of IPR

progression of the useful arts is well-served.⁸¹ However, to design around or improve upon the claimed invention effectively and efficiently, there must exist proprietary and competitive certainty. A competitor, whether designing around or improving upon the claimed invention,⁸² must have confidence in where exactly the patentee built his fence so that he can proceed accordingly and position himself to avoid the potential sting of a plausible infringement allegation.⁸³ This brings us again to the importance of an opposition proceeding. The property rule entitlement in the form of a patent is strengthened by an opposition proceeding because the more prior art references (and accompanying arguments) that are considered by the PTO during prosecution, the more proprietary and competitive certainty there will be *ex ante* with respect to claim scope.⁸⁴ This is consistent with the all-important notice function of the patent claim in a rights-based system. As Randy Barnett has stated:

The boundaries of individual discretion that are defined by a system of clear entitlements serve to allocate decision-making authority among individuals. Vital information is thereby conveyed to all those who might wish to avoid disputes and respect the rights of others, provided they know what those rights are. Potential conflicts between persons who might otherwise vie for control of a given resource are thus avoided. Therefore, an

exchange.”).

81. See *Hilton Davis Chem. Co. v. Wamer-Jenkinson, Co.*, 62 F.3d 1512, 1532 (Fed. Cir. 1995) (en banc) (Newman, J., concurring).

[Competitors of the patentee] may add technologic value in a variety of ways: perhaps by developing a different path to the new markets opened by the patentee, perhaps by adapting later-developed technology to enhance that of the patentee, perhaps by perceiving alternatives and opportunities from a different perspective than that of the patentee.

Id.

82. As will be discussed *infra* Part IV.A, an improver seeks to obtain a patent on his improvement because his bargaining position vis à vis the original patent owner will be greatly enhanced. An improvement patent is the difference between being an infringer with bargaining power and an infringer with considerably less bargaining power, if, for no other reason, an improver without a patent faces Arrow’s Information Paradox. See *supra* text accompanying notes 59-60. A competitor designing around a patent claim, on the other hand, seeks to avoid infringement altogether. See *infra* text accompanying notes 150-53.

83. See Eirik G. Furubotn & Svetozar Pejovich, *Property Rights and Economic Theory: A Survey of Recent Literature*, 10 J. ECON. LITERATURE 1137, 1139 (1972).

Property rights assignments specify the norms of behavior with respect to things that each and every person must observe in his interactions with other persons, or bear the cost for nonobservance. . . . The prevailing system of property rights in the community can be described . . . as the set of economic and social relations defining the position of each individual with respect to the utilization of scarce resources.

Id.

84. As Judge Michel of the Federal Circuit has co-written, “[C]ited prior art fits more logically into the intrinsic evidence category. A list of prior art is in every file history. Thus, an argument can be made that competitors are on notice and should be expected to review such before reaching any conclusion as to claim scope.” Honorable Paul R. Michel & Lisa Schneider, *Vitronics—Some Unanswered Questions*, in CHISUM ET AL., *supra* note 6, at 1101, 1101.

entitlements theory demands that the boundaries of protected domains be ascertainable, not only by judges who must resolve disputes that have arisen, but, perhaps more importantly, by the affected persons themselves before any dispute occurs.⁸⁵

Furthermore, as the research and development of the patentee's competitors may parallel that of the patent applicant, the sooner the competitors realize that someone else has found the "treasure,"⁸⁶ the sooner the competitors can cease what may be wasteful duplicative research and focus their research and development efforts elsewhere.⁸⁷ Thus, proprietary boundaries clearly demarcated *ex ante* not only deter infringing third-party technological development, but will guide the rent-seeking behavior of competitors who wish to improve upon or design around the claimed invention.⁸⁸

III. CONSENT THEORY AND LOCALIZED KNOWLEDGE

A. Freedom From Contract

With the understanding that a patent is a property rule entitlement,⁸⁹ we must next examine when and under what circumstances the transfer or invalidation of this entitlement is legitimate. Contract theory can inform this examination.⁹⁰ The patent prosecution process is in many ways like a contract negotiation between the patent applicant and the PTO,⁹¹ whereby the PTO acts as the agent of society, including the applicant's competitors. All contracts are incomplete to a certain degree; the contract between the patent applicant and the PTO is no exception. This incompleteness is due largely to the inaccessibility of technical knowledge (i.e., prior art),⁹² which somewhere down the road, once factories are built and

85. Randy E. Barnett, *A Consent Theory of Contract*, 86 COLUM. L. REV. 269, 301-02 (1986) (footnotes omitted).

86. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 35-37 (3d ed. 1986).

87. *See* Dam, *supra* note 39, at 265 ("Since rival firms will not normally know, or at least often cannot be sure, that a patent application has been filed, they may be inclined to continue R & D even though they will later learn, on issuance of the patent, that they should have ceased or redirected their R & D efforts.").

88. *See infra* notes 140-70.

89. *See supra* notes 68-88.

90. *See* Barnett, *supra* note 85, at 294 ("The legitimacy of principle of contract that determines which transfers of rights are valid depends upon the nature of individual entitlements and the extent to which rights have been or will be acquired by the parties to the transfer.").

Contract law, according to an entitlements approach, is thus a body of general principles and more specific rules the function of which is to identify the rights of individuals engaged in transferring entitlements, and thereby indicate when physical or legal force may legitimately be used to preserve those rights and to rectify any unjust interference with the transfer process.

Id. at 295.

91. *See supra* note 37.

92. *See infra* Part III.B.

further investments are made, will likely be discovered and used against the patent owner to challenge the validity of his patent.

I am particularly concerned with invalidity determinations based upon prior art that was not considered by the PTO during the prosecution of the patent. A notable empirical study conducted by Paul Allison and Mark Lemley looked at, among other things, validity determinations based primarily on prior art that was considered by the PTO (cited prior art) and prior art that was not considered by the PTO (uncited prior art).⁹³ Their study demonstrates that (1) “most” of the prior art references asserted during litigation in support of invalidation are references that were not considered by the PTO during prosecution; (2) in cases where patents were in fact invalidated, the party challenging validity “disproportionately relied upon” art that was not considered by the PTO; and (3) “[t]he probability of invalidity based on uncited art was 40.8%, while the probability of invalidity based on cited art was 29.6%.”⁹⁴ Allison and Lemley conclude that statistically their data “indicate with a fair degree of confidence that reliance on uncited art was more likely to lead to a finding of invalidity than reliance on cited art.”⁹⁵ Indeed, the Federal Circuit and district courts are quite candid about their lack of deference to the PTO with respect to non-cited prior art.⁹⁶

If the patentee and PTO had knowledge of invalidating prior art during prosecution, it is likely that the bargain struck would have produced patent claims of narrower scope (or a patent may not have issued at all). A competitor, on the other hand, may conclude, based upon an ex post self-study of the patent and prosecution history, that the patentee’s proprietary boundaries are limited by prior art neither considered by the PTO, nor the patentee during prosecution. A court, however, invoking the doctrine of equivalents may disagree with the

93. Allison & Lemley, *supra* note 24, at 231-34.

94. *Id.* at 234; *see also supra* note 45.

95. Allison & Lemley, *supra* note 24, at 234.

96. *See* *Ryco, Inc. v. AG-BAG Corp.*, 857 F.2d 1418, 1423 (Fed. Cir. 1988) (stating that although the burden on the party challenging validity “remains on the challenger, it may be more easily met where the challenger produces prior art that is more pertinent than that considered by the Patent and Trademark Office”); *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359-60 (Fed. Cir. 1984).

When an attacker [of the patent’s validity], in sustaining the burden imposed by § 282, produces prior art or other evidence not considered in the PTO, there is . . . no reason to defer to the PTO so far as its effect on validity is concerned. Indeed, new prior art not before the PTO may so clearly invalidate a patent that the burden is fully sustained merely by proving its existence and applying the proper law. . . . When new evidence touching on validity of the patent not considered by the PTO is relied on, the tribunal considering it is not faced with having to disagree with the PTO or with deferring to its judgment or with taking its expertise into account. The evidence may, therefore, carry more weight and go further toward sustaining the attacker’s unchanging burden.

Id. (emphasis omitted); *see* *Fenton Golf Trust v. Cobra Golf, Inc.*, 48 U.S.P.Q.2d (BNA) 1198, 1200 (N.D. Ill. 1998) (“[I]n cases such as this one where the patent office examiner did not consider the relevant prior art ‘the trial judge is thrown back on nothing more than his own best judgment concerning the implications of that prior art’”) (quoting *Mueller Brass Co. v. Reading Indus., Inc.*, 352 F. Supp. 1357, 1367 (E.D. Pa. 1972)).

competitor and conclude that the patentee is entitled to enjoy claim scope above and beyond what the competitor asserts. The point is that we just don't know. In this regard, the doctrine of equivalents may be viewed as a sort of implied-in-law contract that is imposed upon the competitor. In many ways, the doctrine of equivalents creates a fiction in the name of equity.⁹⁷

In either event, whether we are talking about invalidation or infringement, an imposition has been visited upon the parties based upon information that was not part of the original contract negotiation. This imposition violates what some contract theorists have referred to as "freedom from contract,"⁹⁸ which states that within an entitlements system "transfers of property rights should not be imposed upon [the parties] without their consent."⁹⁹ Accordingly,

[i]n a system of entitlements where manifested rights transfers are what justify the legal enforcement of agreements, any such manifestation necessarily implies that one intends to be "legally bound," to adhere to one's commitment. Therefore, the phrase "a manifestation of an intention to be legally bound" neatly captures what a court should seek to find before holding that a contractual obligation has been created.¹⁰⁰

Prior art considered for the first time during litigation was not part of the original bargain. Although we usually do not think in these terms, we should ask: During the contract negotiations (i.e., patent prosecution), was there, *with respect to the newly cited prior art*, a "manifestation of an intention to be legally bound" on the part of the patentee? I do not think so.¹⁰¹ When a patent is invalidated

97. It should be noted, however, that the trend at the Federal Circuit has been to limit the application of the doctrine of equivalents. *See, e.g., Sage Products, Inc. v. Devon Indus.*, 126 F.3d 1420, 1425 (Fed. Cir. 1997) ("[A]s between the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the public at large, it is the patentee who must bear the cost of its failure to seek protection for this foreseeable alteration of its claimed structure.").

98. Barnett, *supra* note 35, at 840-41.

99. *Id.* at 841. Barnett asserts that a contractual obligation arises. Indeed, *informed consent* plays a crucial role in the notice function of the patent claim:

In contract law, this informational or "boundary defining" requirement means that an assent to alienate rights must be *manifested* in some manner by one party to the other to serve as a criterion of enforcement. Without a manifestation of assent that is accessible to all affected parties, that aspect of a system of entitlements that governs transfers of rights will fail to achieve its main function. At the time of the transaction, it will have failed to identify clearly and communicate to both parties (and to third parties) the rightful boundaries that must be respected. Without such communication, parties to a transaction (and third parties) cannot accurately ascertain what constitutes rightful conduct and what constitutes a commitment on which they can rely. Disputes that might otherwise have been avoided will occur, and the attendant uncertainties of the transfer process will discourage reliance.

Barnett, *supra* note 85, at 302 (emphasis and both parentheticals in original).

100. Barnett, *supra* note 85, at 304 (citation omitted).

101. If the prior art was considered during prosecution, there is a good chance that the resulting patent claims, and thus the conduct of the parties, would have reflected such.

based on new prior art, the liberty interest of the patentee (and the competitor)¹⁰² is impinged upon, if not violated, by such an imposition,¹⁰³ as the patentee loses his proprietary interest when his patent is invalidated and transferred to the public domain without his consent.¹⁰⁴ Indeed, one can argue that there is a moral dimension to this forced transfer.¹⁰⁵ To invalidate the patent *ex post* based on information that was not part of the original contract negotiations, and therefore was not consented to, seems not only bad long-term patent policy, but unjust.¹⁰⁶

102. Even though the competitor does not have a property interest in the form of a patent, he presumably has invested a great deal of money and resources in designing a product that either improves upon or designs around the patent claims. A finding of infringement under the doctrine of equivalents is a proprietary loss (at times an extraordinary loss) to the competitor not only because he may have to pay damages, but the benefits resulting from his improvement or design-around efforts have been diminished.

103. See Richard E. Speidel, *The New Spirit of Contract*, 2 J.L. & COM. 193, 194 (1982).

[T]he spirit of a people at any given time may be measured by the opportunity and incentive to exercise “freedom to” and the felt necessity to assert “freedom from.” Similarly, the nature of a society and its legal order may be determined by the force and permissible scope of these two concepts of liberty and how the inevitable tension between them is resolved.

Id.

104. See Douglas Baird & Thomas Jackson, *Information, Uncertainty, and the Transfer of Property*, 13 J. LEGAL STUD. 299, 300 (1984) (“When we already own property, we want to ensure that we can control its disposition—that a new ‘owner’ will not come into existence without our consent.”) (emphasis omitted); see also Harold Demsetz, *Some Aspects of Property Rights*, 9 J.L. & ECON. 61, 62 (1966) (“A private property right system requires the prior consent of ‘owners’ before their property can be affected by others.”).

105. See Barnett, *supra* note 35, at 299-300.

[T]he consent of the rights holder to be legally obligated is the moral component that distinguishes valid from invalid transfers of alienable rights in a system of entitlements. . . .

. . . . [Thus] legal enforcement is morally justified because the promisor voluntarily performed acts that conveyed her intention to create a legally enforceable obligation by transferring alienable rights.

Id. (footnotes omitted).

106. Randy Barnett writes that the “problem of communicating the requirements of justice is handled by the formal requirements of legality associated with the liberal conception of the rule of law.” Barnett, *supra* note 35, at 856. He cites the work of Lon Fuller as a source of these requirements of legality. Fuller, in *The Morality of Law*, lists eight ways or “routes” in which “an attempt to create and maintain a system of legal rules may miscarry:” Routes two through four are particularly relevant for present purposes. They are:

(2) a failure to publicize, or at least to make available to the affected party, the rules he is expected to observe; (3) the abuse of retroactive legislation, which not only cannot itself guide action, but undercuts the integrity of rules prospective in effect, since it puts them under the threat of retrospective change; (4) a failure to make rules understandable.

LON FULLER, *THE MORALITY OF LAW* 38-39 (1969); see also Barnett, *supra* note 85, at 298.

“[Justice is] . . . rendering every man his due. A man’s due is what he has acquired by his own efforts and not taken from some other man *without consent*. A community in which this conception is realized will be one in which the members agree not to interfere in the legitimate endeavors of each other to

Although one may argue that it was an ex ante foreseeable risk that newly discovered prior art would surface during litigation, and that the patentee should bear the loss,¹⁰⁷ this argument not only fails to consider who is in a better position to bear the loss ex post,¹⁰⁸ but also ignores the message, one of *uncertainty*, which it sends to future inventors and entrepreneurs—those very individuals who seek to improve upon or design around the patented invention.¹⁰⁹ The result may be the lessening of entrepreneurial inventive activity and underutilization of knowledge.¹¹⁰ This is particularly true with respect to the small inventor.

achieve their individual goals, and to help each other to the extent that the conditions for doing so are mutually satisfactory Such a community will be one giving the freest possible rein to all its members to develop their particular capacities and use them to carry out their plans for their own betterment [T]his activity is The Good for Man”

Id. (quoting Wallace Matson, *Justice: A Funeral Oration*, SOC. PHIL. & POL'Y, Autumn 1983, at 94, 111-12 (emphasis added) (alterations in original)).

107. *See, e.g.*, Richard A. Posner & Andrew M. Rosenfield, *Impossibility and Related Doctrines in Contract Law: An Economic Analysis*, 6 J. LEGAL STUD. 83, 105-10 (1977) (arguing that under the impossibility doctrine the party who, ex ante, was better able to foresee the risk should bear the loss). A related argument is that the patentee should have conducted a more thorough patent search, and if prior art surfaces during litigation that was not part of the original prosecution, the patentee implicitly assumed such a risk and has no one to blame but himself. *See, e.g.*, Clayton P. Gillette, *Commercial Rationality and the Duty to Adjust Long-Term Contracts*, 69 MINN. L. REV. 521, 538 (1985) (“If the exchange is . . . a voluntary one between rational actors, then any ‘failure’ to include specific terms or to consider a specific risk may itself be a voluntary part of the agreement. What the parties have agreed to, in effect, is to consider only certain risks and no others.”). This criticism, however, fails to take into consideration (1) knowledge that is supposedly publicly accessible, but practically undiscoverable, *see Coffin v. Ogden*, 85 U.S. (18 Wall.) 120, 124 (1873); (2) non-patent publications that are in obscure publications or are only indexed (not disseminated) in domestic or foreign libraries, *see In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986), and (3) “secret prior art” under 35 U.S.C. § 102(g) (1994), *see Thomson, S.A. v. Quixote Corp.*, 166 F.3d 1172, 1175 (Fed. Cir. 1999); *International Glass Co. v. United States*, 408 F.2d 395, 403 (Ct. Cl. 1969).

108. For instance, investments may be made in manufacturing facilities, distribution channels, employees, etc.

109. *See infra* Part III.

110. These notions are dear to the Austrian School of Economics conception of contract. *See* Christopher T. Wonnell, *Contract Law and the Austrian School of Economics*, 54 FORDHAM L. REV. 507, 527 (1986).

Professors Kronman and Posner believe the justification for contracts is that both parties ex ante benefit from them. A mistake or subsequent change in circumstances may destroy that mutual benefit, and any such result should, according to Kronman and Posner, be rectified by allocating the risk of that mistake or subsequent change to the party to whom it would have been allocated if both parties had been fully perceptive and informed. The Austrians, by contrast, regard entrepreneurial perceptiveness as an essential skill to be encouraged, and their defense of contract is not that both parties necessarily benefit ex ante from every contract but that over the long run the system of contracting encourages the full use of human knowledge.

Id. (footnotes omitted); *see also* ISRAEL M. KIRZNER, PERCEPTION, OPPORTUNITY AND PROFIT 215-17 (1979) (discussing the discovery and exploitation of existing errors in a “disequilibrium

However, it is the small inventor who has been, somewhat ironically, among the most vocal in the fight against establishing an opposition proceeding in the United States. The concern on the part of small inventors is that an opposition proceeding will be used, or abused, by large corporations in a dilatory fashion. This is a legitimate concern.¹¹¹ Nevertheless, there are counter-balancing benefits flowing from an opposition proceeding, namely enhanced proprietary certainty (a stronger shield) and a reduction in litigation (or certainly the threat of litigation), which can be much more costly and debilitating than defending an opposition.¹¹²

It is crucial to note, however, that an opposition proceeding should be accompanied by a narrowing of the standards of review currently employed by the courts when determining validity. It makes little sense to have an opposition proceeding if a court will review validity *de novo* based on prior art that was initially considered by the PTO.¹¹³ Indeed, in response to my survey, several district court judges indicated that they would favor an opposition proceeding if the appellate standard of review for validity was narrower than it is presently. As

market”).

111. However, in recent years the opposition rate in the European Patent Office (“EPO”) has been less than 10%. For example, in 1997, the EPO issued 39,646 patents of which 2518 or 6.3% were opposed. *See EPO Website* (last modified 1998) <<http://www.european-patent-office.org>>; *see also* Harold C. Wegner, *Patent Law Simplification and the Geneva Convention*, 14 AIPLA Q.J. 154, 200-01 (1986) (asserting that abusive tactics in the European Patent Convention have been greatly diminished, and that the opposition rate in Europe is only about 10%).

112. Greater proprietary security and reducing litigation are two of the primary objectives of the reexamination statute, which permits third parties to challenge the validity of an issued patent if a substantial new question of patentability arises usually as a result of newly found prior art. *See Patent Reexamination: Hearings on S. 1679 Before the Senate Comm. on the Judiciary*, 96th Cong. 2 (1979) [hereinafter *Patent Reexamination Hearings*] (opening statement of Sen. Birch Bayh).

All too often the granting of a U.S. patent turns out to be an invitation to endless litigation as competitors pull out all of the stops to invalidate or infringe on an important patent. Small businesses and independent inventors are especially susceptible to this threat

. . . The cost of such litigation to both parties frequently exceeds \$250,000 [(now usually over \$1 million)]. Many independent inventors and small business owners not able to pay such fees are susceptible to being “blackmailed” into allowing infringements on their patents or are forced to license them for nominal fees to avoid going to court. This creates a situation where the patent system is used as a club to beat down the very people that it was formed to protect. While patents are important to all businesses, they are the lifeblood to the independent inventor or small business owner who uses the patent grant as a shield to protect their invention from stronger competitors.

Id.

113. Interestingly, in *In re Portola Packaging, Inc.*, 110 F.3d 786, 791 (Fed. Cir. 1997), the Federal Circuit held that for purposes of reexamination, a “substantial new question of patentability” under 35 U.S.C. § 302 (1981) is *not* created by combining references that were already considered by the PTO during the original examination. *See also In re Recreative Tech. Corp.*, 83 F.3d 1394, 1398 (Fed. Cir. 1996) (“Reexamination is barred for questions of patentability that were decided in the original examination.”).

one judge stated, "My 'yes' [to an opposition proceeding] is qualified. The question is whether any finality would attach to the determination by the PTO. In other words, if the challenge can be renewed in litigation on a de novo basis, I doubt the value of the PTO proceeding."¹¹⁴

Having discussed the injustice of invalidating a patent based on prior art that was not considered by the PTO, we must ask what the alternative is. Certainly, I am not suggesting that existing patents that never should have issued should continue to exist. To do so would work an injustice on society, as the social costs associated with legitimately issued patents become simply unbearable with illegitimately issued patents. Thus, we have competing policy considerations between protecting the patentee's proprietary interest and investment on the one hand; and, on the other hand, eradicating patents that never should have issued. The goal here is to reduce the damage costs of erroneous patentability decisions in a cost-efficient manner, as the cost of achieving a correct patentability decision can become too high as well. An opposition proceeding goes a long way toward achieving this goal, particularly since illegitimately issued patents are largely a result of incomplete information during prosecution. An opposition proceeding will provide a mechanism whereby technical information is funneled into the original contract negotiations. The resulting proprietary boundaries will reflect the technical knowledge that was before the contracting parties and informed their consent, and will also provide competitors with a more fully developed public record upon which to rely.¹¹⁵ In essence, the technical knowledge, or prior art, can be viewed as adding resolution to the inventor's blueprints, forcing him to adjust the position, width, and height of his proprietary fence. In the end, there is greater certainty consistent with the notice function of the patent claim,¹¹⁶ which benefits those individuals both passively and actively operating within the patent system.

In many ways, an opposition proceeding is similar to the current reexamination proceeding, as the policies underlying both regimes and the benefits flowing therefrom parallel each other. With respect to reexamination, the Federal Circuit identified three "benefits":

First, the new procedure could settle validity disputes more quickly and less expensively than the often protracted litigation involved in such cases. Second, the procedure would allow courts to refer patent validity questions to the expertise of the Patent Office. . . . Third, reexamination would reinforce "investor confidence in the certainty of patent rights" by affording the PTO a broader opportunity to review "doubtful patents."¹¹⁷

Of course, a significant difference between an opposition and a reexamination is that the former will occur prior to the issuance of a patent whereas a reexamination takes place during the life of an existing patent. This distinction

114. Statement of a federal district court judge in response to my questionnaire (on file with author).

115. See *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) ("The claims, specification, and file history . . . constitute the public record of the patentee's claim, a record on which the public is entitled to rely.").

116. See 35 U.S.C. § 112 (1994).

117. *Patlex Corp. v. Mossinghoff*, 758 F.2d 594, 602 (Fed. Cir. 1985) (citation omitted) (quoting 126 CONG. REC. 29,895 (1980) (statement of Rep. Kastenmeier)).

is important because an opposition proceeding will likely achieve *ex ante* many of the benefits of a reexamination proceeding.¹¹⁸

Importantly, in enacting the reexamination statute, Congress recognized that invalidity holdings were largely based on prior art that was not considered by the PTO during the original examination.¹¹⁹ That was true in 1980 when the reexamination statute was enacted,¹²⁰ and it remains true today.¹²¹

B. The Decentralized Nature of Technical Knowledge

The benefits of an opposition proceeding become more apparent once we understand that one of the primary problems with the PTO's patentability determinations is the inaccessibility of technical information, particularly non-patent technical publications and unpublished information. At any given moment, there are researchers scattered throughout the world, engaging in technological activities related to the claimed invention. A great deal of this research will be published in technical journals (some more obscure than others); some of it will not. The point is that much of this research—both published and unpublished—is undiscovered by the patent applicant and PTO, yet is material to the question of patentability and ultimate claim scope.¹²² Frequently, however, this art will be

118. Furthermore, an opposition proceeding would allow significantly greater third-party involvement than the current reexamination proceeding.

119. *See Patent Reexamination Hearings*, *supra* note 112, at 2 (“All too often patent holders find themselves in lengthy court proceedings where valuable patents are challenged on the grounds that the patent examiner missed pertinent data during the initial patent search.”); *id.* at 21 (testimony of Donald R. Dunner, President of the American Patent Law Association) (“[I]t is our feeling that regardless of how much money is spent in the patent system to improve the operation of the Patent Office, it is inevitable, with computers or otherwise, that all of the prior art will not be uncovered.”).

120. *See KOENIG*, *supra* note 24, §5.05[4] (“In many cases the Patent Office and the courts are not determining patentability on the bases of the same prior art. Where this is true, the Patent Office may be faulted for not finding the best prior art, but not for applying a lower standard of patentability.”); *see also* Federico, *supra* note 24, at 249.

121. *See Allison & Lemley*, *supra* note 24, at 234.

122. Much of this prior art is, for practical purposes, publicly inaccessible and searching for such would likely result in inordinate search costs. For example, 35 U.S.C. § 102(a) (1994) states that a patent shall issue unless “the invention was known or used by others in this country.” *Id.* Although the terms “known” and “used” have been interpreted to mean publicly known or used, *see Gayler v. Wilder*, 51 U.S. (10 How.) 477, 496 (1850), the publicity required will be satisfied in the absence of deliberate concealment, *see State Indus., Inc. v. Rheem Mfg. Co.*, 223 U.S.P.Q. (BNA) 305, 316-17 (M.D. Tenn. 1984), *aff’d in part and rev’d in part*, 769 F.2d 762 (Fed. Cir. 1985). Another example of invalidating activity that is practically inaccessible is “on-sale” events as set forth in § 102(b). 35 U.S.C. § 102(b). Section 102(b) states that an applicant will be barred from obtaining a patent if the invention was offered for sale or on sale more than one year before the filing of the patent application claiming the invention. *Id.* Rarely will the PTO be aware of on-sale activity. Section 102(g) is yet another example of practically inaccessible prior art. *Id.* § 102(g). Prior art under § 102(g) is a form of so-called secret prior art in that, unlike § 102(a), there is no publicity requirement. *See Thomson, S.A. v. Quixote Corp.*, 166 F.3d 1172, 1175 (Fed. Cir. 1999); *International Glass Co. v. United States*, 408 F.2d 395 *passim* (Ct. Cl. 1969) (discussing 35 U.S.C. § 102). Importantly, prior art under § 102(a) (i.e., knowledge and use) and (g) is usually not

discovered during litigation by a party faced with an infringement suit, as handsomely financed defendants will likely scour the earth for invalidating prior art. As the Federal Circuit noted, “there is virtually always ‘pertinent’ and ‘relevant’ art apparently unconsidered in the PTO and available to a patent challenger.”¹²³ In short, technical knowledge is widely dispersed and localized.

Friedrich Hayek wrote of the decentralized nature of knowledge:

“[D]ata” from which the economic calculus starts are never for the whole society “given” to a single mind which could work out the implications and can never be so given.

The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is . . . how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge which is not given to anyone in its totality.¹²⁴

Uninformed patentability determinations can be costly to both the patentee and his competitors. The virtue of an opposition proceeding resides in its ability to coordinate and channel vast amounts of technical information into a centralized decisionmaking body (viz., the PTO) comprised of technical experts. As Hayek notes, “[A]s far as scientific knowledge is concerned, a body of suitably chosen experts may be in the best position to command all the best knowledge available.”¹²⁵ This “smoking out” or capturing of technical information is a way

documented, and thus must be proven through the use of oral testimony.

123. *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1549 (Fed. Cir. 1983); *see also In re Portola*, 110 F.3d 786, 789 (Fed. Cir. 1997) (Discussing the policy justifications for a reexamination proceeding, the court cited the congressional testimony of Donald R. Dunner, the president of the American Patent Law Association, who stated, “[I]t is inevitable . . . that all of the prior art will not be uncovered [by the PTO]. A determined advocate, desiring to do in a patent, spending tens of thousands of dollars in litigation situations, can often, if not always, find something that has not been considered by the [PTO].”).

124. FRIEDRICH A. HAYEK, *The Use of Knowledge in Society*, in *INDIVIDUALISM AND ECONOMIC ORDER* 77-78 (1948); *see also* Brian J. Loasby, *Economics of Dispersed and Incomplete Information*, in *METHOD, PROCESS, AND AUSTRIAN ECONOMICS* 114 (Israel W. Kirzner ed. 1982).

125. HAYEK, *supra* note 124, at 80. Although when discussing the virtues of a market system, Hayek was not necessarily referring to scientific knowledge, *id.*, his point is nevertheless applicable to scientific knowledge in the context of patent prosecution. By publishing the patent application, the PTO as a centralized coordinator is placing competitors of the patent applicant and others on notice that a patent has been presumptively granted. This publication ameliorates the knowledge problem because competitors in possession of material knowledge (i.e., prior art) will be “smoked out” and encouraged to come forward with their knowledge. *See* Barnett, *supra* note 35, at 842-43.

Insuperable knowledge problems prevent us from allocating jurisdiction [(i.e., as Barnett phrases it later in his article, “jurisdictions of diverse individuals and associations over physical resources”)] on the basis of which particular person or group of persons is actually in the best position to know how certain resources

to incorporate the private sector into the patentability determination—a sort of burden shifting.¹²⁶ As Randy Barnett writes of the “first-order” knowledge problem, “[T]he distribution of jurisdiction over physical resources should mirror as closely as possible the distribution of access to knowledge in society.”¹²⁷ The goal is to allocate resources in a way that maximizes widely dispersed and localized technical knowledge so that the bargain ultimately struck between the patent applicant and the PTO, as reflected in the patent claims, remains faithful to the consent of the parties and results in more clearly demarcated patent claims. As a result, invalidity findings based on newly found prior art will occur less often, and the courts will not feel as compelled to invoke the imposing doctrine of equivalents. As one federal district court judge, in response to my survey, succinctly put it, “If we are going to give a presumption in favor of the patentee, the examiner should not wear blinders.”¹²⁸

Although there will nonetheless exist undiscovered prior art due to, as noted above, the decentralized nature of knowledge, this burden shifting will neutralize the patent applicant’s advantage under an *ex parte* procedure and level the playing field by arming the PTO with prior art that it or the patent applicant did not discover. This result will hopefully breed more confidence by the bench and the bar in the PTO’s patentability determinations.

IV. THE VIRTUES OF CERTAINTY

Proprietary and competitive certainty are virtues in patent law and, under 35 U.S.C. § 112, find expression in the patent claim, as it is the claim that defines

may be used. If a centralized institution charged with allocating jurisdictions knew what it needed to know to make such allocations, a decentralized jurisdictional strategy would be unnecessary. The most we can hope for is to determine the general characteristics of those who are in the best position to have knowledge of potential resource uses, regardless of whether they in fact always have the best knowledge. In sum, we rely on these general characteristics to establish a presumption of competence in favor of individuals and groups who have access to the personal and local knowledge pertaining to their own situation.

Id.

126. Often times, the commercial success of a patented invention is not realized until several years after the patent has issued. *See* Dam, *supra* note 39, at 258 (“[M]any fundamental patents are not successfully commercialized for a decade or even substantially longer after issuance.”). As such, potential opposers may refrain from filing an opposition lest, in hindsight, they come to realize an opposition was not worth pursuing. For this reason, not only should the present reexamination proceeding allow for greater third-party participation, but potential opposers also need an incentive to file an opposition. For example, if a competitor does not oppose the issuance of a patent, perhaps a strengthened presumption of validity will accompany the patent during litigation or the competitor may be estopped during litigation from challenging the validity of the patent on certain grounds.

127. Barnett, *supra* note 35, at 842.

128. Statement of a federal district court judge in response to my questionnaire (on file with author).

the metes and bounds of the patentee's property interest.¹²⁹ As Judge Rich has written, the claim is not "the measure of what was invented," rather, "*the claims are the measure of the patentee's right to exclude.*"¹³⁰ In short, "the name of the game is the claim."¹³¹ Thus, it is difficult to overemphasize the importance of the patent claim, for it is at the center of what may be called patent law's dynamic triangle, comprising (1) the patentee; (2) the patentee's competitors; and (3) the public welfare.

However, the modern patent claim does not provide the requisite degree of certainty. Judge Plager of the United States Court of Appeals for the Federal Circuit has expressed incredulity at the weakness and susceptibility of the patent grant:

I can't imagine an administrative law arrangement where you get a license, a permit, a grant of right, which people can challenge time and time again.

. . . . It not only surprises me, it amazes me. Why would you possibly have a system that gives you a government grant which is little more than a right to litigate? That's what it really is—a federal right to litigate. Well, when I make a great invention I don't want a federal right to litigate—I want a protected property interest in that invention.¹³²

An ambiguous patent claim begets a weak patent grant, which adversely affects the entire patent system. Not only is the proprietary interest of the patentee threatened, but the patentee's competitors are left in a precarious situation. In this regard, the Supreme Court in *Markman v. Westview Instruments, Inc.*, wrote:

"[T]he limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public." Otherwise, a "zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field," and "[t]he public [would] be deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights."¹³³

Indeed, a "zone of uncertainty" is potentially devastating to the interests of those who are inclined to improve upon or design around the patentee's claimed invention. As Judge William Bryson noted in *Litton Systems, Inc. v. Honeywell, Inc.*:

Patent counselors should be able to advise their clients, with some confidence, whether to proceed with a product or process of a particular kind. The consequences of advice that turns out to be incorrect can be devastating,

129. 35 U.S.C. § 112 (1994) ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.").

130. Rich, *supra* note 6, at vi (emphasis in original).

131. Giles S. Rich, *Extent of Protection and Interpretation of Claims—American Perspectives*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 497, 499 (1990).

132. *An Interview with Circuit Judge S. Jay Plager*, J. PROPRIETARY RTS., Dec. 1993, at 2, 6.

133. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996) (alterations in original) (citations omitted).

and the costs of uncertainty—unjustified caution or the devotion of vast resources to the sterile enterprise of litigation—can be similarly destructive.¹³⁴

Furthermore, a district court judge, in response to my questionnaire, echoed Judge Bryson's concern:

Patent cases usually involve products that have some design differences.

Whether this is an infringement, or whether the patent is valid as to the challenge, is a matter where uncertainty is economically harmful. Early resolution of that uncertainty would be much preferable to subsequent litigation.¹³⁵

In addition to the interest of the patentee and his competitors, there is a significant public welfare aspect underlying notions of certainty in the patent law. American intellectual property law has traditionally been justified in utilitarian or consequentialist terms.¹³⁶ Utilitarians posit that but for the prospect of a patent (or copyright) and the concomitant right to exclude, adequate incentives for the creation of intellectual property would not exist, resulting in a less than "socially optimal output of intellectual products."¹³⁷ That is:

If competitors could simply copy books, movies, and records, and take one another's inventions and business techniques, there would be no incentive to spend the vast amounts of time, energy, and money necessary to develop these products and techniques. It would be in each firm's self-interest to let others develop products, and then mimic the result. No one would engage in original development, and consequently no new writings, inventions, or business techniques would be developed. To avoid this disastrous result, the argument claims, we must continue to grant intellectual property rights.

Notice that this argument focuses on the users of intellectual products, rather than on the producers. Granting property rights to producers is here seen as necessary to ensure that enough intellectual products (and the countless other goods based on these products) are available to users. The grant of property rights to the producers is a mere means to this end.¹³⁸

134. *Litton Sys., Inc. v. Honeywell, Inc.*, 87 F.3d 1559, 1580 (Fed. Cir. 1996); see *Merrill v. Yeomans*, 94 U.S. 568, 573-74 (1877) ("[N]othing can be more just and fair, both to the patentee and to the public, than that the former should understand and correctly describe just what he has invented, and for what he claims a patent.").

135. Statement of a federal district court judge in response to my questionnaire (on file with author).

136. Consequentialism holds that "all actions are right or wrong in virtue of the value of their consequences." THE OXFORD COMPANION TO PHILOSOPHY 154 (Honderich ed. 1995). Consequentialists, as the name suggests, focus on the consequences our patent laws have on the public good.

137. Edwin C. Hettinger, *Justifying Intellectual Property*, 18 PHIL. & PUB. AFF. 31, 48 (1989). See generally JEREMY BENTHAM, AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION (J.H. Burns et al. eds., 1970) (discussing in part, the concept of societal and individual utility).

138. Hettinger, *supra* note 137, at 48 (emphasis added) (parenthetical in original); see also Jeremy Waldron, *From Authors to Copiers: Individual Rights and Social Values in Intellectual Property*, 68 CHI.-KENT L. REV. 841, 854 (1993) (According to the utilitarian justification, "useful works will be elicited through the rational self-interest of authors [and inventors] up to the point at which their social costs exceed their social benefits."); *Mazer v. Stein*, 347 U.S.

Thus, when analyzing our patent system we must be cognizant of three entities: (1) the patentee; (2) the patentee's competitors; and (3) the public. This dynamic triangle feeds off of the engine of inventive activity and technological progress, which in turn is fueled by a secure and clearly demarcated patent grant. Viewing patent rights as property rule entitlements, the strength of which are buoyed by a post-grant opposition proceeding, goes a long way toward realizing optimal certainty *ex ante*¹³⁹ and arming patentees and their competitors with the requisite proprietary and competitive certainty.

Let's now take a look at the relationship between certainty and incentive in our patent system by exploring the role of certainty in incentive-to-improve theory and incentive-to-design-around theory.

A. Certainty and the Incentive To Improve

One of the fundamental policies of patent law is to "promote[] disclosure of inventions" so as "to stimulate further innovation."¹⁴⁰ Building upon and access to preexisting knowledge is central to efficient technological advancement.¹⁴¹ As Edmund Kitch writes, "each innovation generates shifts in the matrix of technological possibilities, and the realization of the possibilities may have a significance that dwarfs the original invention considered alone."¹⁴²

When we speak of "improvement patents," however, we must keep in mind one of the basic tenets of patent law: one may obtain a patent on a particular invention yet still infringe an extant patent. Consider the following example:

Inventor 1 patents a widget comprising elements A, B, and C. Inventor 2

improves upon Inventor 1's invention by adding D, thus giving Inventor 2 a patent on a widget comprising elements A, B, C, and D (assume D is a nonobvious addition to A, B, and C). Although patented, Inventor 2 cannot practice his invention as it would infringe Inventor 1's patent because Inventor 2's invention contains each and every element (A, B, and C) claimed

201, 219 (1954) ("The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and useful Arts.'") (quoting U.S. CONST. art. I, § 8, cl. 8).

139. See Rich, *supra* note 131, at 499, 501.

The U.S. is strictly an examination country and the main purpose of the examination, to which every application is subjected, is to try and make sure that what each claim defines is patentable. . . .

....

. . . [T]he function of claims is to enable everyone to know, without going through a lawsuit, what infringes the patent and what does not.

Id.

140. Aronson v. Quick Point Pencil Co., 440 U.S. 257, 262 (1979).

141. See, e.g., RICHARD R. NELSON & SIDNEY G. WINTER, AN EVOLUTIONARY THEORY OF ECONOMIC CHANGE 130 (1982); Merges & Nelson, *supra* note 75, at 843-44; Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, J. ECON. PERSP., Winter 1991, at 29, 30-31.

142. Kitch, *supra* note 42, at 271.

in Inventor 1's patent. On the other hand, Inventor 1 cannot practice Inventor 2's invention without the permission of the latter.¹⁴³

What we have in this situation is what is known in patent law as "blocking patents"; a situation that is largely influenced by market forces. At least three things can happen: (1) the parties cross-license each other; a seemingly attractive option if indeed the improvement adds significant value to the original patent;¹⁴⁴ (2) the parties sell the patents to a third party who will coordinate future development and improvement; or (3) the parties fail to come together for whatever reason (e.g., high transaction costs), even if the value of the improvement is commercially significant.¹⁴⁵

The point to be made here is that the improver has bargaining power in the form of a *patented* invention. There is a significant difference between being an infringer with a patent and an infringer without a patent. Without a patent, not only will the improver infringe the extant patent, but he would be unable to preclude others from using his unpatentable improvement. On the other hand, a patent, while not allowing the improver to escape infringement, will arm the improver with bargaining power as he is now able to preclude others, including the owner of the patent that he infringes, from making, using, or selling his improvement. Competitive certainty is of the utmost importance in this regard because the improver needs to know with some predictability which improvements will be novel and nonobvious over the extant patented technology. As Kenneth Dam has written, "[I]t is important that the line between the patented and the unpatented be clearly demarcated in the patent itself, rather than being left to future litigation"¹⁴⁶ This predictability is facilitated through an

143. CHISUM ET AL., *supra* note 6, at 5 n.16 (emphasis added).

144. *See* Standard Oil Co. (Indiana) v. United States, 283 U.S. 163, 171 n.5 (1931). Referring to cross-licensing, the Court stated:

This is often the case where patents covering improvements of a basic process, owned by one manufacturer, are granted to another. A patent may be rendered quite useless, or "blocked," by another unexpired patent which covers a vitally related feature of the manufacturing process. Unless some agreement can be reached, the parties are hampered and exposed to litigation. And, frequently, the cost of litigation to a patentee is greater than the value of a patent for a minor improvement.

Id.

145. *See* Lemley, *supra* note 62, at 1067 n.350.

While it might seem irrational to think that an original inventor would suppress an improvement within her control if it truly was valuable, several circumstances might induce her to do so. If the improvement requires a new manufacturing technology or a different market approach, there may be substantial fixed costs associated with switching over production from the old to the new way. The further removed the improvement is from the original invention, the worse this problem is likely to be. . . . The alternative to switching over production facilities . . . is also unlikely to be attractive to the original inventor. Even if the licensor could extract the full value of the improvement in a licensing transaction, which seems unlikely, its market control will disappear along with the intellectual property right.

Id. For a general discussion of blocking patents, see Merges, *supra* note 59.

146. Dam, *supra* note 39, at 267.

opposition proceeding whereby the proprietary boundaries of the *claimed* invention sought to be improved upon are clearly demarcated *ex ante*, at least to a greater extent than they would be under the present *ex parte* system.

Let's take one step back and look at the improvement process. There are times when the written description of a patent itself will suggest to an improver a particular idea or experiment that will not infringe the patent. The improver will then proceed with his experimentation, presumably unencumbered by litigation or a threat thereof. However, most of the time the improver must make use of the patented invention in his research, in which case, the improver will either have to purchase the patented product on the open market, which conveys an implied license to use the product,¹⁴⁷ or obtain a license from the patent holder to use the patented technology. It is anything but a forgone conclusion that the patent holder will agree to grant the improver a license, especially if the improver poses a commercial threat to the patent holder or the transaction costs are otherwise prohibitively high.¹⁴⁸ To the extent that licensing negotiations break down because of problems of valuation or claim scope, an opposition proceeding may facilitate an agreement, particularly if the original patent was recently issued. Because competitors have a voice in the claimed invention's examination, an opposition proceeding creates a more complete prosecution history, which in turn breeds a sense of intimacy with both the claim scope and value of the claimed invention.

With that said, licensing negotiations will no doubt continue to break down. In which case, the would-be improver may channel his inventive energies elsewhere.¹⁴⁹ One alternative is for the improver to design around the patented invention and avoid infringement altogether, in which case the benefit of an opposition proceeding becomes perhaps even more important.

147. See *United States v. Univis Lens Co.*, 316 U.S. 241, 249 (1942).

148. See Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1072-73 (1989).

The risk that the parties will be unable to agree on terms for a license is greatest when subsequent researchers want to use prior inventions to make further progress in the same field in competition with the patent holder, especially if the research threatens to render the patented invention technologically obsolete.

Id.; see also JOHN W. SCHLICHER, *LICENSING INTELLECTUAL PROPERTY* 47 (1996) (stating that the primary transaction costs are 1) the information costs of identifying buyers and sellers, and informing buyers of the rights for sale, and 2) the costs of negotiating agreements, performing under them, and detecting and stopping violations). An argument can be made that an opposition proceeding will have the effect of reducing the information costs as patent applications will be published, presumably in journals that are read on a regular basis.

149. This is not to say that the improver may not proceed in his experimentation without a license, particularly if the improver was confident that he could patent the improvement and thus position himself at the bargaining table with the original patentee. See Eisenberg, *supra* note 148, at 1044 ("Some subsequent researchers might find it worthwhile to improve a patented invention even without a license if the improvement itself were patentable.").

B. Certainty and the Incentive To Design Around

As the name “design around” suggests, third parties, usually a competitor, may purposefully circumvent the boundaries of the patent claim and create a competitive non-infringing alternative to the claimed invention. The practice of designing around existing patents creates competitive substitutes and advances, resulting in competition among patented technologies.¹⁵⁰ The public clearly benefits from such activity.¹⁵¹ Indeed, as the Federal Circuit recently stated, “One of the benefits of a patent system is its so-called ‘negative incentive’ to ‘design around’ a competitor’s products, even when they are patented, thus bringing a steady flow of innovations to the marketplace.”¹⁵²

150. Several economists and courts have asserted that a patent grant does not necessarily translate into monopolistic market power. See HERBERT HOVENCAMP, *ECONOMIC AND FEDERAL ANTITRUST LAW* 156, 219 (1985) (“[A] patented article . . . may compete intensely with similar products which are either unpatented or covered by different patents. . . . More often than not the patent . . . makes a product ‘distinguishable’ but confers little or no measurable market power upon its owner.”); SCHERER, *supra* note 64, at 446 (“[F]ew patents are sufficiently basic and broad to ‘fence in’ a field altogether.”). See also Justice O’Connor’s concurring opinion in *Jefferson Parish Hospital v. Hyde*, 466 U.S. 2 (1984), wherein she rejected the majority’s presumption that a patent or copyright leads to market power:

A common misperception has been that a patent or copyright . . . suffice[s] to demonstrate market power. While . . . [this] factor[] might help to give market power to a seller, it is also possible that a seller in these situations will have no market power; for example, a patent holder has no market power in any relevant sense if there are close substitutes for the patented product.

Id. at 38 n.7; *Abbott Lab. v. Brennan*, 952 F.2d 1346, 1354 (Fed. Cir. 1991) (“A patent does not of itself establish a presumption of market power in the antitrust sense.”); *Chiuminatta Concrete Concepts, Inc. v. Target Prods., Inc.*, No. CV 92-1523-LGB (SX), 1992 WL 465720 (C.D. Cal. 1992), *aff’d mem.*, 19 F.3d 41 (Fed. Cir. 1994). Of course, there are occasions where a patent, particularly a pharmaceutical patent, in and of itself confers monopolistic market power.

151. See *Slim Fold Mfg., Inc. v. Kinkead Indus., Inc.*, 932 F.2d 1453, 1457 (Fed. Cir. 1991) (“Designing around patents is . . . one of the ways in which the patent system works to the advantage of the public in promoting progress in the useful arts, its constitutional purpose.”).

152. *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236 (Fed. Cir. 1985); see also *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1520 (Fed. Cir. 1995) (en banc) (per curiam).

The ability of the public successfully to design around—to use the patent disclosure to design a product or process that does not infringe, but like the claimed invention, is an improvement over the prior art—is one of the important public benefits that justify awarding the patent owner exclusive rights to his invention.

Id.; *In re Alappat*, 33 F.3d 1526, 1553 (Fed. Cir. 1994) (“Even after a patent has been awarded for a new, useful, and nonobvious practical application of an idea, others may learn from the underlying ideas, theories, and principles to legitimately ‘design around’ the patentee’s useful application.”); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991) (“[D]esigning or inventing around patents to make new inventions is encouraged.”); *Yarway Corp. v. Eur-Control USA*, 775 F.2d 268, 277 (Fed. Cir. 1985). *But see* SCHERER, *supra* note 64, at 386-87 (arguing that resources used in designing around patents could be put to better use); Donald F. Turner, *The Patent System and Competitive Policy*, 44 N.Y.U. L. REV. 450,

The question that needs to be addressed for present purposes is how an opposition proceeding relates to design-around theory. The answer is enhanced certainty. To design around a patent claim, the competitor must know with some particularity and certainty where the patentee's proprietary interest begins and ends so as to allow the competitor to produce a viable alternative without being subjected to an infringement suit.¹⁵³ For this to happen, competitors must have confidence in their exegesis of the patent and public record. This is the rationale for limiting the use of extrinsic evidence (e.g., expert testimony) during claim interpretation as competitors are entitled to rely on that which is of public record.¹⁵⁴ However, under the present ex parte system of patent prosecution and broad standards of review, it is very difficult to determine the success of design-around efforts *at the time such efforts are made*; that is, litigation is usually the answer, often times a costly answer.¹⁵⁵ As Judge Newman has written:

Patent law is practiced mainly through legal advice and counseling over the course of the commitment of creative and capital resources, to manage legal risk in the already risky business of industrial innovation. Like all commercial law, the cost of guessing wrong about the law and its application is rarely recoverable.¹⁵⁶

We know that sometimes the parties simply cannot come to terms during licensing negotiations and litigation is costly and often times unnecessary. Faced with high transaction costs associated with licensing on the one hand and litigation on the other, the competitor should have the viable option of designing around the patented technology. Indeed, it is common practice for a competitor, wishing to design around a claimed invention, to secure a "noninfringement

455 (1969) (arguing that resources used to design around patents could be spent on unsolved problems instead).

153. See *Carson Pirie Scott*, 946 F.2d at 1538.

[C]laims must be "particular" and "distinct," as required by 35 U.S.C. § 112, so that the public has fair notice of what the patentee and the Patent and Trademark Office have agreed constitute the metes and bounds of the claimed invention. Notice permits other parties to avoid actions which infringe the patent and to design around the patent.

Id.

154. See *Key Pharm. v. Hercon Lab. Corp.*, 161 F.3d 709, 716-17 (Fed. Cir. 1998); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996).

In those cases where the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. The claims, specification, and file history, rather than extrinsic evidence, constitute the public record of the patentee's claim, a record on which the public is entitled to rely. In other words, competitors are entitled to review the public record, apply the established rules of claim construction, ascertain the scope of the patentee's claimed invention and, thus, design around the claimed invention.

Id.

155. See *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 828 (Fed. Cir. 1992) ("Of course, determining when a patented device has been 'designed around' enough to avoid infringement is a difficult determination to make. One cannot know for certain that changes are sufficient to avoid infringement until a judge or a jury has made that determination.").

156. Pauline Newman, *The Federal Circuit: Judicial Stability or Judicial Activism?*, 42 AM. U. L. REV. 683, 687 (1993).

opinion” from patent counsel before making or using the design-around product or process. The opinion is based on a study of the patent (and prosecution history), particularly the patent claims, the prior art, and the competitor’s product or process. An opposition proceeding will provide greater clarity and flesh out those items that patent counsel considers when writing a noninfringement opinion. If the opinion suggests that the competitor’s product or process does not infringe the patent, the competitor may proceed with confidence in developing the product or process. According to the Federal Circuit, “counsel’s opinion must be thorough enough, as combined with other factors, to instill a belief in the infringer that a court might reasonably hold the patent is invalid, not infringed, or unenforceable.”¹⁵⁷ These opinions, however, are all too often, in the eyes of judges and juries, inaccurate. Thus, although it is difficult to write in unequivocal terms,¹⁵⁸ the true value of the noninfringement opinion today is not necessarily to instill confidence in the competitor’s design-around efforts or even to protect the competitor from a finding of infringement, but rather to shield the competitor from a finding of *willful* infringement.¹⁵⁹ As such, the crucial notice function of the patent claim has been diminished. The following two cases will hopefully illustrate this point.

In *Westvaco Corp. v. International Paper Co.*,¹⁶⁰ Westvaco, a competitor of International Paper Company (“IPC”), sought and obtained a noninfringement opinion from its patent counsel “before it originally began manufacturing the accused product.”¹⁶¹ Westvaco thereafter proceeded to “design around” IPC’s claimed technology. The Federal Circuit, while recognizing that Westvaco “attempted to design around IPC’s product,”¹⁶² nevertheless affirmed the district court’s finding of infringement:

Westvaco made specific structural changes to its product so that its product was not a copy of IPC’s product. For example, as the district court found, Westvaco’s product included a tie layer between the inner layer of low density polyethylene and the layer of ethylene vinyl alcohol. IPC’s claims do not include such a tie layer. Westvaco’s outside patent counsel deemed that change and others as adequate to avoid infringement. Although this attempt to design around IPC’s product proved unsuccessful, as evidenced by the

157. *Ortho Pharm. Corp. v. Smith*, 959 F.2d 936, 944 (Fed. Cir. 1992).

158. See *Portec*, 970 F.2d at 829 n.9 (“An opinion of counsel, of course, need not unequivocally state that the client will not be held liable for infringement. An honest opinion is more likely to speak of probabilities than certainties.”).

159. The Federal Circuit has held that a “finding of willfulness requires the fact-finder to find that clear and convincing evidence shows ‘that the infringer acted in disregard of the patent . . . [and] had no reasonable basis for believing it had a right to do the acts.’” *American Med. Sys., Inc. v. Medical Eng’g Corp.*, 6 F.3d 1523, 1530 (Fed. Cir. 1993) (quoting *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1565 (Fed. Cir. 1983) (omission and alteration in original)). Under 35 U.S.C. § 284, a finding of willfulness can lead to treble damages. 35 U.S.C. § 284 (1994); see *King Instruments Corp. v. Perego*, 65 F.3d 941, 947 (Fed. Cir. 1995).

160. 991 F.2d 735 (Fed. Cir. 1993).

161. *Id.* at 744.

162. *Id.* at 745.

court's finding of infringement, Westvaco should not be found to have willfully infringed based on its attempt.¹⁶³

After affirming the finding of infringement, the court extolled the virtues of design-around theory:

[K]eeping track of a competitor's products and designing new and possibly better or cheaper functional equivalents is the stuff of which competition is made and is supposed to benefit the consumer. One of the benefits of a patent system is its so-called "negative incentive" to "design around" a competitor's products, even when they are patented, thus bringing a steady flow of innovations to the marketplace. It should not be discouraged by punitive damage awards . . .¹⁶⁴

It seems that the attorney noninfringement opinion letter, so common in modern patent litigation, is really a non-*willful* infringement opinion letter. One could rightfully ask to what extent a finding of no willful infringement encourages competitors to design around patented inventions. Doesn't a finding of infringement actually provide a disincentive to design around? No doubt, many noninfringement opinions are poorly drafted, but to the extent the opinion suffers from being ill-informed about the prior art or the boundaries of the patented invention, an opposition proceeding would have a remedial effect.

Attempting to design around a patent is even more risky if all that is available to the competitor is a commercial embodiment of the claimed invention. In such a situation, the competitor is more culpable as he does not have the guidance of claim language; and, therefore, has no one to blame but himself if he is found to infringe. Take the example of *State Industries, Inc. v. A.O. Smith Corp.*¹⁶⁵ Both State Industries ("State") and A.O. Smith manufactured and sold industrial water heaters. State filed for a patent on November 25, 1977, claiming a particular water heater. Prior to issuance of the patent, State had begun to market its soon-to-be patented invention under the name "Sandblaster." The accompanying literature stated "Patent Applied For" and the following comment: "New exclusive feature of Sandblaster water heater reduces build-up of sand, lime and sediment." As the court noted, "[t]his was the totality of Smith's information on any 'patent position' by State on the invention at bar until the commencement of this suit."¹⁶⁶

Smith, a competitor of State, purchased the product on the open market and attempted to design around it. The Federal Circuit noted that "Smith candidly concedes in its brief before us that 'the appearance of [State Industries'] Sandblaster heater on the market spurred the defendant, Smith, into activity to design a competing product.'"¹⁶⁷ Although the court ultimately affirmed the district court's finding of infringement, the Federal Circuit, as in *Westvaco*, wrote of the positive benefits of designing around and found that the competitor, Smith, did not willfully infringe.¹⁶⁸ According to the court, "To willfully infringe a

163. *Id.*

164. *Id.*

165. 751 F.2d 1226 (Fed. Cir. 1985).

166. *Id.* at 1234.

167. *Id.* at 1235.

168. *See id.* at 1235-36.

patent, the patent must exist and one must have knowledge of it. A 'patent pending' notice gives one no knowledge whatsoever."¹⁶⁹

I suggest that to base a finding of no willful infringement on the fact that the infringed patent did not exist is inconsistent, to say the least, with the role of the patent system, generally, and the notice function of the patent claim, specifically. In *Westvaco* and *State Industries*, both the district court and the Federal Circuit (upon review) found that the competitor infringed the respective patents-in-suit, although not willfully. In both cases, the virtues of designing around were articulated. But there is one important difference between the two cases: the competitor in *Westvaco* had access to the patent, particularly the patent claims, it was attempting to design around. The competitor in *State* only had access to the commercial embodiment of the patent. However, this fact did not seem to make a difference to the court, which is rather odd given the importance the Federal Circuit has placed on the claim itself. The court has repeatedly asserted that it is the claim, not the commercial embodiment, that forms the patentee's property interest.¹⁷⁰

V. CONCLUSION

My primary concern in this Article is the diminished importance of the patent claim's notice function. The reasons for this diminishment are two-fold: (1) the inherent ambiguity of language; and (2) broad judicial discretion on the part of the United States Court of Appeals for the Federal Circuit, which is perhaps largely due to the ex parte nature of the patent prosecution process. There is little that can be done about the limits of language other than for patent prosecutors to exercise more care in claim drafting. However, there is a great deal that can be done about the patent application process and the Federal Circuit and district courts' lack of deference. The United States should adopt a post-grant opposition proceeding, which will provide greater proprietary and competitive certainty ex ante. A majority of federal district court judges favor such. In the end, however, to realize the benefits of an opposition proceeding, the Federal Circuit and district courts must understand that the PTO's patentability determinations are entitled to greater deference and, therefore, the court should accordingly narrow its standards of appellate review.

169. *Id.* at 1236.

170. *See, e.g., Berry Sterling Corp. v. Pescor Plastics, Inc.*, 122 F.3d 1452, 1454 (Fed. Cir. 1997) ("A properly conducted patent analysis, be it for infringement or validity, necessarily requires construing the patent, and more specifically, the claim."); *Zenith Lab., Inc. v. Bristol-Myers Squibb Co.*, 19 F.3d 1418, 1423 (Fed. Cir. 1994) ("As we have repeatedly said, it is error for a court to compare in its infringement analysis the accused product or process The only proper comparison is with the claims of the patent.").

APPENDIX

SURVEY

A VIEW FROM THE BENCH

In an attempt to gauge what federal district court judges thought about the utility of an opposition proceeding, I conducted an empirical survey of 726 federal district court judges. Of the 726 judges to whom I sent a cover letter and a questionnaire, 204 (or 28%) responded. The cover letter explained the structure of an opposition proceeding without discussing the advantages or disadvantages of such. The questionnaire asked each judge the following questions:

1. Have you adjudicated any cases in which the validity of a patent was at issue?¹⁷¹

Yes No

1a. If yes, how many? Fewer than 3; Between 3 and 7; Greater than 7

2. Would you favor the implementation of a pre-issuance (post-grant) proceeding in patent law, whereby a third party can challenge the patentability of a claimed invention, before the PTO, in an inter partes proceeding?

A. The Data

Of the 204 federal district court judges who responded to my questionnaire, ninety-three (or 46%) indicated that they would favor the implementation of a pre-issuance (post-grant) opposition proceeding; forty-five (or 22%) indicated that they would oppose the implementation of an opposition proceeding; and sixty-six (or 32%) had no opinion due to "lack of experience" in patent cases or "unfamiliarity" with the issue.¹⁷²

171. In retrospect, a more accurate question would have been, "Have you *tried* any cases in which the validity of a patent was at issue?"

172. See *infra* Figure 1. One empirical study conducted by Lawrence G. Kastriner in 1995 indicated that there is significant support by corporate patent counsel for an opposition proceeding. Mr. Kastriner conducted a survey of 65 patent counsel cutting across the technological spectrum. Of those 65, 42 responded. Of those 42, 90% stated that they would favor a post-grant opposition proceeding. See Nard, *Deference, Defiance*, *supra* note 20, at 1509 n.111.

Furthermore, twenty-nine (or 31%) of the ninety-three judges who favor an opposition proceeding have adjudicated more than seven patent cases; forty (or 43%) adjudicated between three and seven patent cases; and twenty-four (or 26%) adjudicated fewer than three patent cases.¹⁷³

173. See Figure 2a.

With respect to the forty-five judges who oppose the implementation of an opposition proceeding, twenty-two (or 49%) adjudicated more than seven patent cases; fourteen (or 31%) adjudicated between three and seven patent cases; and nine (or 20%) adjudicated fewer than three patent cases.¹⁷⁴

B. The Reasons Behind the Data

The judges provided several reasons for why they either favored or disfavored the implementation of a post-grant opposition proceeding. As to those judges who favored an opposition proceeding,¹⁷⁵ their reasons can be categorized as follows: (1) PTO expertise/institutional competence (31%);¹⁷⁶ (2) diminution in

174. See Figure 2b.

175. See *infra* Figure 3.

176. Some representative comments were:

1. "There are few federal judges who are knowledgeable and experienced enough to preside over patent trials. Few of us have a scientific/mechanical background on the bench. Evidentiary issues are twice as hard for a federal judge as they would be for a judge with a scientific/mechanical background. We judges are interested in a just result. I feel most inadequate when I preside over a patent trial because the subject matter is so foreign to me."

2. "We see so few patent cases, that on the rare occasion when one is filed, it

litigation/conservation of judicial and client resources (46%);¹⁷⁷ (3) interpretive aid for patentability and claim construction (21%);¹⁷⁸ and (4) other (2%).¹⁷⁹ The reasons of those judges who disfavored an opposition proceeding¹⁸⁰ can be

takes a considerable amount of time to come up to speed. Even so, the highly technical nature of the issues presented is often very difficult for the average judge to fully comprehend.”

3. “Prior review by examiners skilled in the pertinent art—considering technical arguments challenging patentability can only serve to eliminate (or at least focus) patent ambiguities lay judges must consider when construing a patent.”

4. “The [opposition] procedure would allow an expert in the PTO to make the initial determination of many issues which later arise in court, a less efficient and more expensive forum.”

177. Some representative comments were:

1. “This [opposition procedure] could save litigants money.”

2. “Such a procedure might resolve issues at the administrative level, thus eliminating issues or cases (or perhaps refining the legal arguments) before the parties get involved in expensive and cumbersome litigation.”

3. “This procedure would conserve judicial resources.”

4. “I believe proceedings of this sort would likely result in less litigation and fewer instances in which the district court is compelled to invalidate a patent after it is issued.”

5. “I should think that such a proceeding might serve to obviate protracted and expensive litigation challenging the validity of a patent after it is issued.”

178. Some representative comments were:

1. “Such a prior proceeding might help to better define the patent claims.”

2. “[An opposition proceeding] would clarify what the patent covers and the state of the art.”

3. “[An opposition proceeding] might provide useful guidance for deciding issues of patentability.”

179. For example, some judges qualified their “yes” answer because of appellate review issues, namely their concern with respect to broad standards of review.

180. See *infra* Figure 4.

categorized as follows: (1) abuse/delay (46%);¹⁸¹ (2) system works just fine (24%);¹⁸² (3) additional complexity (21%);¹⁸³ and (4) no reason given (9%).

181. Some representative comments were:

1. "The opposition proceeding is subject to abusive use for purposes of delay and harassment."
2. "[An opposition proceeding] would do nothing but further delay issuance of patents. A pre-issuance disclosure would probably cause mischief discouraging applications."
3. "Such a proceeding would further slow down the Patent Office, which is already understaffed and swamped."
4. "I have sufficient faith in the expertise of the patent examiners and very little faith in the honesty of competitors who would contrive evidence at an early stage."

182. Some representative comments were:

1. "A sufficient level of scrutiny already exists. An additional procedural hurdle to patentability is both unnecessary and potentially expensive to the patentee."
2. "[An opposition proceeding] isn't needed."
3. "The present system seems to work very well."
4. "The process works fine as now in place."

183. Some representative comments were:

1. "The system needs to be simplified; not another layer of administrative overload and expense. Let the system work."
2. "It would add just another level of litigation."
3. "[An opposition proceeding] would add more confusion to an already complicated process."