Possession in Patent Law

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POSSESSION IN PATENT LAW

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I. INTRODUCTION

ONE fundamental premise of patent law, according to the courts, is that the system is a quid pro quo between the state and the inventor; in exchange for disclosing his invention in the patent itself, the inventor is granted the right to exclude others from practicing the invention for a limited time.[1] Disclosure, therefore, is central to the patent system.[2] The courts have reasoned that the disclosure requirements in U.S. patent law are designed to further innovation by enhancing the store of knowledge available to the public.[3] Other innovators can rely on disclosures in patents and build upon that information.[4] In this way, patents serve a teaching function, informing the public about the invention.

The courts take the benefit of disclosure as a given in the quid pro quo view of patents.[5] Such an assumption may not be warranted. Evaluation of the patent system suggests that the ability of patents to perform this "teaching" function is rather limited. Moreover, such a function is inconsistent with other theoretical justifications for the patent system. In contrast to the quid pro quo view, the theoretical models used to explain the need for a patent system—the public good and prospect theories—fail to even acknowledge how enablement fits into the economics that underlie

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1. *See* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 484 (1974) ("The more difficult objective of the patent law to reconcile with trade secret law is that of disclosure, the quid pro quo of the right to exclude."); Capon v. Eshhar, 418 F.3d 1349, 1357 (Fed. Cir. 2005) (Disclosure "satisfies the policy premises of the law, whereby the inventor's technical/scientific advance is added to the body of knowledge, as consideration for the grant of patent exclusivity."); *see also Kewanee*, 416 U.S. at 496-97 n.2 (Douglas, J., dissenting) ("The decision of Congress to adopt a patent system was based on the idea that there will be much more innovation if discoveries are disclosed and patented than there will be when everyone works in secret. Society thus fosters a free exchange of technological information at the cost of a limited 17-year monopoly.").

2. *See* NATIONAL RESEARCH COUNCIL, A PATENT SYSTEM FOR THE 21ST CENTURY 36 (Stephen A. Merrill et. al. eds., 2004) [hereinafter PATENT SYSTEM] ("The quid pro quo for giving the patent holder the right to exclude others is to compel disclosure of the invention in terms that enable others to replicate, modify, and circumvent it."); Mark A. Lemley, *Inducing Patent Infringement*, 39 UC DAVIS L. REV. 225, 236 n.53 (2005); Note, *The Disclosure Function of the Patent System (or Lack Thereof)*, 118 HARV. L. REV. 2007, 2011 (2005) (noting courts view disclosure as the "centerpiece of patent policy") [hereinafter *Disclosure Function*].

3. Integra Lifesciences I, Ltd/ v. Merck KGaA, 331 F.3d 860, 873 (Fed. Cir. 2003) (Newman, J., dissenting), *vacated*, Merck KGaA v. Integra Lifesciences I, Ltd., 125 S. Ct. 2372 (June 13, 2005).

4. As Judge Newman noted in dissent:

> The purpose of a patent system is not only to provide a financial incentive to create new knowledge and bring it to public benefit through new products; it also serves to add to the body of published scientific/technologic knowledge. The requirement of disclosure of the details of patented inventions facilitates further knowledge and understanding of what was done by the patentee, and may lead to further technologic advance. The right to conduct research to achieve such knowledge need not, and should not, await expiration of the patent.

Id.

5. *Id.*

the system.[6] More recent theoretical analyses of the patent system—signaling and portfolio theories—require disclosure of some sort, but not at the level for one of ordinary skill in the art to practice the invention. The pervasiveness of disclosure obligations and their conspicuous absence in the economic and legal scholarship warrant further inquiry.[7]

This article in Part II provides an overview of the disclosure obligations in the United States, focusing primarily on enablement, the most robust of the requirements. In Part III, the article examines the enablement requirement's virtual absence in economic literature. Theoretically, the patent system, by articulating the quid pro quo, requires a level of free-riding that is contrary to the public good justification of patent law, undermines certain aspects of the prospect theory, and is irrelevant to any signaling function. Moreover, the enabling disclosures in patents do not serve a teaching function particularly well. Due to a number of factors, inventors are unlikely to review published patents and applications and, thus, are generally unaware of the patents of others. The patent disclosure itself does not directly foster further innovation. Enablement's ability to inform the public domain, therefore, appears to be, at best, overstated by the courts.

Part IV of the article identifies a core, yet unde-rappreciated, concept in patent law—possession. Possession of the invention conceptually pervades much of patent law doctrine, although it remains unnamed. Possession, though, is a rather nebulous concept. This article proposes that enablement is the best mechanism by which to show possession, and this view of the disclosure obligation is far more consistent theoretically and doctrinally than the alleged "teaching" function of enablement. By shifting to this view of enablement as possession, disclosure becomes theoretically consistent with the theories underlying patent law, and its pervasiveness in patent law becomes clear. Part V reviews the current uses—both express and implied—of enablement, and also posits other areas of law where adoption of enablement as *the* standard would simplify the law and hopefully add greater certainty.

II. AN OVERVIEW OF THE DISCLOSURE OBLIGATIONS OF 35 U.S.C. § 112

Throughout the history of the U.S. patent system, courts have recognized that the ultimate beneficiary of a patent is not the patentee but instead the public, to whom the invention is disclosed instead of being

6. Mark Janis, *On Courts Herding Cats: Contending with the "Written Description" Requirement (and Other Unruly Patent Disclosure Doctrines)*, 2 WASH. U. J.L. & POL'Y 55, 57 (2000).

7. Others have also recognized the dearth of literature on the disclosure obligations in patent law. *See, e.g., id.* ("[N]either courts nor commentators have ever satisfactorily mapped the full contours of the enablement requirement much less the other extant disclosure requirements.").

kept a secret.[8] The courts therefore have embraced the quid pro quo view of the patent system as a central tenet of patent law—patentees are afforded the right to exclude others in exchange for the disclosure of their inventions to the public through the patent.[9]

The U.S. patent system has three primary disclosure requirements: enablement, written description, and best mode.[10] The disclosure obligations in modern patent law are governed by the first paragraph of 35 U.S.C. § 112. Specifically, the patent act describes the following requirements:

> The specification shall contain [1] a written description of the invention, [2] and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and [3] shall set forth the best mode contemplated by the inventor of carrying out his invention.[11]

The following section explains these three separate obligations: written description, enablement, and best mode.

A. Written Description

Clause [1] is the written description requirement, which requires an applicant to disclose in the patent specification a description of the invention that communicates to the person having ordinary skill in the art ("PHOSITA") that he possessed the invention at the time he filed his application.[12] The written description's primary function is to prevent an applicant from adding new matter to the patent specification or, in other words, to ensure that the patentee's claims are limited only to those embodiments adequately disclosed in the application.[13]

The Federal Circuit has recently enhanced the role of the written

8. *See, e.g.*, Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 148 (1989) ("Thus, from the outset, federal patent law has been about the difficult business 'of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.'") (quoting 13 Writings of Thomas Jefferson 335 (Memorial ed. 1904)); United States v. Dubilier Condenser Corp., 289 U.S. 178, 186 (1933) ("Thus a monopoly takes something from the people. An inventor deprives the public of nothing which it enjoyed before his discovery, but gives something of value to the community by adding to the sum of human knowledge."); Cont'l Paper Bag Co. v. E. Paper Bag Co., 210 U.S. 405, 424 (1908) ("And it was further said in that case that the inventor could have kept his discovery to himself; but, to induce a disclosure of it, Congress has, by its legislation, made in pursuance of the Constitution, guaranteed to him an exclusive right to it for a limited time . . . .").

9. *See* Timothy R. Holbrook, *The More Things Change, the More They Stay the Same: Implications of Pfaff v. Wells Electronics, Inc. and the Quest for Predictability in the On-Sale Bar*, 15 Berkeley Tech. L.J. 933, 937 (2000) [hereinafter Holbrook, *More Things Change*].

10. 35 U.S.C. § 112, ¶ 1 (2000).

11. *Id.* (numerical notations added).

12. *See, e.g.*, Tronzo v. Biomet, Inc., 156 F.3d 1154, 1158 (Fed. Cir. 1998) ("To meet this requirement, the disclosure of the earlier application, the parent, must reasonably convey to one of skill in the art that the inventor possessed the later-claimed subject matter at the time the parent application was filed.").

13. *See id.*

description requirement, however.[14] In a controversial move, the court has applied the written description requirement to originally filed claims.[15] Seemingly, originally filed claims are self-supporting and should ipso facto satisfy the written description requirement because, by definition, no new matter has been added.[16] The Federal Circuit, however, has removed the written description requirement from its historical, new-matter-policing role and now reasons that even originally filed claims can violate the requirement if there is inadequate support in the rest of the specification to show that the applicant possessed the invention.[17] Critics of the court's jurisprudence view this shift in doctrine as creating a "super enablement" requirement, particularly in the context of biotechnology, which is where the court primarily has utilized the enhanced written description requirement.[18] This move has not gone unnoticed by some judges on the Federal Circuit, who have questioned whether there even *is* a written description requirement separate from enablement, which is found in part [2] of § 112, ¶ 1.[19] Presently, the written description and enablement requirements remain distinct.[20]

B. ENABLEMENT—HOW TO MAKE AND USE THE INVENTION

Clause [2] contains the enablement requirement, which requires that the disclosure teach the PHOSITA how to make and use the invention.[21] It guarantees that, once the patent term expires, others will be able to practice the invention freely based strictly on the patent disclosure.[22] A patent is enabled if the PHOSITA can practice the invention without undue experimentation.[23] This standard is the key disclosure obligation because, under the quid pro quo, it guarantees that the public will be in possession of the knowledge of how to practice the invention.[24] Enablement is, in fact, the only disclosure obligation required under the Agreement on Trade-Related Aspects of Intellectual Property ("TRIPS").[25]

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14. *See, e.g.*, Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 1567-68 (Fed. Cir. 1997). *See generally* Janice M. Mueller, *The Evolving Application of the Written Description Requirement to Biotechnological Inventions*, 13 BERKELEY TECH. L.J. 615 (1998) [hereinafter Mueller, *Evolving Application*].

15. *Regents of the Univ. of Cal.*, 119 F.3d at 1567-68.

16. Mueller, *Evolving Application*, *supra* note 14, at 635-36.

17. *Id.* at 629-33.

18. *Id.* at 633.

19. *See, e.g.*, Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956, 976 (Fed. Cir. 2002) (Rader, J., dissenting from denial of rehearing en banc).

20. *Id.* at 981.

21. 35 U.S.C. § 112, ¶ 1 (2000).

22. *See* United States v. Dubilier Condenser Corp., 289 U.S. 178, 186-87 (1933) ("An exclusive enjoyment is guaranteed him for seventeen years, but upon the expiration of that period, the knowledge of the invention enures to the people, who are thus enabled without restriction to practice it and profit by its use.").

23. *In re* Wands, 858 F.2d 731, 736-37 (Fed. Cir. 1988).

24. Janis, *supra* note 6, at 55-56.

25. *See* TRIPS, art. 29, ¶ 1 ("Members *shall require* that an applicant for a patent disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art . . .") (emphasis added); *see also* Janis, *supra* note 6, at 55-56 ("It is equally unsurprising that enablement is one of the international minimum

The enablement standard contains two components: the disclosure must disclose both how to make and how to use the invention. The "how to use" prong is actually more a reflection of the requirement that an invention have utility.[26] The PTO treats "how to use" rejections as violations of both sections 112 and 101.[27] This distinction rarely is important in mechanical devices, but can be crucial in the chemical arts. An inventor may have isolated a new chemical and a method of preparing that chemical, but she may not yet know of a use for the chemical. While her disclosure could teach how to make the chemical, it would fail the "how to use"/utility patentability requirement.[28] Thus, "how to make" is more properly considered the key enablement disclosure obligation.

Enablement under § 112 obligates the patent applicant to disclose his invention in a way that allows one of ordinary skill in the art to practice the invention.[29] The courts, however, have made clear that satisfaction of the enablement requirement does not preclude the PHOSITA from experimenting at all.[30] Some level of experimentation is still permitted, but when those experiments become "undue," then the disclosure is insufficient.[31] The courts have identified a number of factors relevant to assessing whether any experimentation would be undue:

1) The quantity of experimentation necessary;
2) The amount of direction or guidance presented;
3) The presence or absence of working examples;
4) The nature of the invention;
5) The state of the prior art;
6) The relative skill of those in the art;
7) The predictability or unpredictability of the art; and
8) The breadth of the claims.[32]

Enablement, while conceptually simple, is legally and factually complex. To further complicate matters, whether a disclosure is enabling can shift over time; as the knowledge of the PHOSITA shifts, an identical disclo-

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standards for Trade-Related Aspects of Intellectual Property Rights ("TRIPS") - compliant patent systems. . . ."). Countries are permitted, but not required, to include the requirement of disclosing the best mode of practicing the invention. *Id.* Japan, Europe, and many other systems, unlike the United States, do not require disclosure of the inventor's best mode. JANICE M. MUELLER, AN INTRODUCTION TO PATENT LAW 77 (2003); Timothy R. Holbrook, *The Treaty Power and the Patent Clause: Are There Limits on the United States' Ability to Harmonize?*, 22 CARDOZO ARTS & ENT. L.J. 1, 41 n.62 (2004).

26. Process Control Corp. v. Hydreclaim Corp., 190 F.3d 1350, 1358 (Fed. Cir. 1999).

27. *See, e.g., id.*; *see also* Holbrook, *More Things Change*, *supra* note 9, at 968-69. This distinction can also be important in the context of conception of an invention, where the inventor must be able to communicate how to make the invention but not necessarily the utility of the invention. *See id.* at 980-81.

28. *See In re* Fisher, 421 F.3d 1365, 1378-79 (Fed. Cir. 2005). This distinction is also important with respect to the enablement's role in anticipation. *See infra* notes 152-194 and accompanying text; *see also* Rasmusson v. Smithkline Beecham Corp., 413 F.3d 1318, 1326 (Fed. Cir. 2005).

29. *In re* Wands, 858 F.2d 731, 736-37 (Fed. Cir. 1988).

30. *Id.* at 736-37.

31. *Id.*; *see* Holbrook, *More Things Change*, *supra* note 9, at 975-76.

32. *Wands*, 858 F.2d at 737.

sure may shift from not being enabled to being enabled.[33] It is truly more of a standard than a bright-line legal rule. Given the complexity of the issue, and its root in the knowledge of the PHOSITA, a lack of certainty may be appropriate.

C. Best Mode

Finally, clause [3] contains the best mode requirement, which obligates patent applicants to subjectively disclose what the inventor believes is the best method of practicing the invention, if there is one.[34] The idea behind the best mode requirement is to prevent the patentee from retaining as a trade secret the best manner of practicing the embodiment, while disclosing only inferior approaches to the public in order to retain a competitive advantage.[35] Best mode is optional under TRIPS,[36] but has been harshly criticized as failing to serve the policy purposes for which it exists.[37] The United States is the only country that contains a best mode requirement,[38] leading many to call for its abolition.[39]

Accordingly, of the three disclosure requirements contained within § 112, enablement is primarily responsible for the "teaching" function required by the quid pro quo view of patents.[40] It is indeed the only disclo-

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33. *See Ramusson*, 413 F.3d at 1326-27 (giving an application a date of priority at the point the same disclosure became enabling to the PHOSITA). The case is different than the use of written description to control priority by precluding new matter. New matter was not at issue; instead, a disclosure that was insufficient when originally filed eventually *became* sufficient with later continuation applications because the knowledge in the art had evolved.

34. *See, e.g.*, Bayer AG v. Schein Pharms., Inc., 301 F.3d 1306, 1314 (Fed. Cir. 2002) ("Unlike enablement, the existence of a best mode is a purely subjective matter depending upon what the inventor actually believed at the time the application was filed. Because of the subjective nature of the best mode inquiry, the best mode disclosure requirement—unlike enablement—cannot be met by mute reference to the knowledge of one of skill in the art. The reason is pragmatic. It is unreasonable if not impossible to require the ordinary artisan to peer into the inventor's mind to discover his or her idiosyncratic preferences as of the filing date.").

Technically, best mode involves a two-step inquiry: first, does the inventor subjectively possess the best mode and, second, if so, has he communicated that mode in a manner so as to enable objectively one of ordinary skill in the art to practice the best mode. *See* N. Telecom, Ltd. v. Samsung Elecs. Co., 215 F.3d 1281, 1286 (Fed. Cir. 2000).

35. *In re* Gay, 309 F.2d 769, 772 (C.C.P.A. 1962) ("Manifestly, the sole purpose of this latter requirement is to restrain inventors from applying for patents while at the same time concealing from the public preferred embodiments of their inventions which they have in fact conceived."); *see also* Mueller, *supra* note 25, at 76-77. The Court of Customs and Patent Appeals is one of the predecessor courts to the Federal Circuit, and its precedent is binding on the Federal Circuit unless overruled en banc or by the Supreme Court. *See* S. Corp. v. United States, 690 F.2d 1368, 1369 (Fed. Cir. 1982) (en banc).

36. TRIPS art. 29 ¶ 1 ("Members . . . may require the applicant to indicate the best mode for carrying out the invention known to the inventor . . . .").

37. *See, e.g.*, Patent System, *supra* note 2, at 120-21. *But see* Jerry R. Selinger, *In Defense of "Best Mode": Preserving the Benefit of the Bargain for the Public*, 43 Cath. U. L. Rev. 1071, 1071-72, 1096-97 (1994).

38. Patent System, *supra* note 2, at 121; Mueller, *supra* note 25, at 77.

39. Patent System, *supra* note 2, at 121. The current patent reform bill in Congress would eliminate the best mode requirement. *See* H.R. 2795, 109th Cong. § 4 (2005).

40. Janis, *supra* note 6, at 55-57.

sure obligation mandated under international law.[41] One member of the Federal Circuit considers enablement to be "arguably the most important patent doctrine after obviousness."[42] Enablement is undeniably a central tenet of patent law, both in the United States and abroad.[43]

III. THE "TEACHING" FUNCTION OF ENABLEMENT–REALITY OR MYTH?

Although enablement is the key disclosure obligation, its role as "teaching" an invention to the public in the patent system's quid pro quo justification merits further exploration, which previous literature has ignored. Also conspicuously absent is any analysis of enablement's role in the other theoretical analyses of patent law—the reward theory, prospect theory, and portfolio theory. Little academic literature has explored or theorized the role of enablement in these various theories, a conspicuous absence given the central role that the doctrine plays. This section will explore this previously undertheorized area of patent law.

A. The Quid Pro Quo View of Patent Disclosures

In the eyes of the courts, the primary function of the patent system is to promote public welfare through the disclosure of new inventions.[44] This benefit to the public is twofold. First, the patent gives an incentive to create and market the invention, which benefits the public, even if the public must pay monopoly prices. A highly priced invention is better than no invention at all. Second, the public benefits from the disclosure of the invention because the public storehouse of knowledge is thus enhanced, allowing others to rely upon the teachings of the patent to generate even further, follow-on innovation. The Federal Circuit has embraced this latter view as an important function of patents, recognizing that efforts to "design around" a patent do not undermine the value of patents and indeed are laudable.[45]

The courts have relied on this policy justification as the primary reason for the patent system.[46] The courts have trumpeted this policy as the sole

41. *Id.*

42. Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956, 982 (Fed. Cir. 2002) (Rader, J., dissenting from denial of rehearing en banc).

43. Janis, *supra* note 6, at 55 (describing enablement as "the principal doctrine speaking to the adequacy of a patentee's disclosure").

44. *See* Shubha Ghosh, *Patents and the Regulatory State: Rethinking the Patent Bargain Metaphor after Eldred*, 19 Berkeley Tech. L.J. 1315, 1319-21 (2004).

45. *See, e.g.*, Teva Pharms. USA, Inc. v. Pfizer, Inc., 395 F.3d 1324, 1328 (Fed. Cir. 2005); Intel Corp. v. VIA Techs., Inc., 319 F.3d 1357, 1367 (Fed. Cir. 2003) (noting that "patent law encourages competitors to design around"); Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996). Designing around is a function of demonstrating possession of the invention, as opposed to exposing the public to new and better ideas. This is demonstrated by the Federal Circuit's increasing use of public notice as the dominant policy driving patent law. *See infra* notes 233-258 and accompanying text.

46. *See supra* note 8 and accompanying text; *see also In re* Barker, 559 F.2d 588, 594 (C.C.P.A. 1977) (Markey, C.J., dissenting) ("How exaltive of form over substance. How illustrative of stare decisis rampant. The board is saying that it doesn't matter that one

justification for patents, giving virtually no attention to other theories of patent law that have garnered far greater attention by scholars. The literature has not thoroughly addressed how a teaching role for patents fits, if at all, into these other theories of patent law.

B. ENABLEMENT'S "TEACHING" ROLE IN PATENT THEORY—OR LACK THEREOF

There has been a robust discussion of economic justifications for patent law. The literature is rich in discussing how the patent system operates to combat the public good nature of information and the potential for wasteful, duplicative races to innovate and to commercialize. Essentially absent from almost all of this literature, however, is a discussion of the role that the disclosure obligations, and particularly enablement, play in these theories. Review of these theories demonstrates that disclosure is, in fact, in considerable tension with these justifications for the patent system.

1. The Inconsistencies between a Teaching Function and the Incentive or "Reward" Theory

The classic justification for a patent system is that patents are needed to counter the public good nature of information. Public goods are things that can be freely copied by others, and consumption by one person does not deplete the resource.[47] Without a patent, competitors could copy the invention at relatively low cost and free ride on the original creator's work without incurring the now-sunk research and development costs of the original creator.[48] This free-riding would allow competitors to sell the good at a lower price than the original innovator. From an ex ante perspective, such free-riding reduces the incentive for anyone to engage in the research and development of the good in the first place—why bother to spend the resources if competitors will be able to undersell you?[49] Patents, therefore, give an incentive to innovate by allowing the inventor to recover her research and development costs during the patent term, and

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discloses an invention in such 'clear, concise and exact terms' (enablement) as to enable its practice, the very purpose and quid pro quo of the patent system from its inception.").

47. *See* Ghosh, *supra* note 44, at 1332; Mark A. Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 129 (2004) [hereinafter Lemley, *Justifications*]; Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, , 75 TEX. L. REV. 989, 994-95 (1997) [hereinafter Lemley, *Economics of Improvement*].

48. Lemley, *Justifications*, *supra* note 47, at 129-30.

49. *See, e.g.*, John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 439-40 (2004); Lemley, *Justifications*, *supra* note 47, at 29-30. Criticisms of this theory exist. Indeed, the absence of a patent system would not destroy all innovation. An innovator may be able to recoup her sunk costs as a result of other market phenomena, such as the first-mover advantage and network effects. *See* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1584-88 (2003) (discussing non-patent innovation incentives).

the patentee is rewarded with a patent for her innovation.[50]

What role, then, does the teaching function of the enablement requirement play in this system? Seemingly none. Requiring the inventor to teach others how to make and use the invention does not serve to combat the public good nature of information. To the contrary, the quid pro quo of disclosure for protection encourages the dissemination of information.[51] One can envision a system where the patent is published at expiry, allowing the patent holder to maintain secrecy over the invention while procuring the rents to compensate for her investment. Litigation could take the form of trade secret litigation, where the details of the invention are not disclosed to the public. This approach would preserve the function of protecting against the public good problem, yet patents are currently published at issuance and generally eighteen months after the patent application is filed.[52] Indeed, pre-grant publication severely undermines the incentive theory of patent law. While it provides notice to competitors of what the inventor intends to claim, it also disseminates the invention to the public at an early point in the process. The information—the public good—is thus released to the public before patent protection officially begins. As a matter of policy, therefore, the disclosure in the patent is not designed solely to ensure competition once the patent has expired but instead to enrich the state of the art contemporaneously with the invention. Such a function is in tension, if not antithetical, to the incentive theory of patent law.

In fact, the courts have in fact lauded the use of the patent system to encourage "design around" innovation, where a competitor alters the patented invention in a way so as to be outside the patent claims.[53] Designing around is a form of incremental innovation. The quid pro quo view of the patent system, therefore, contemplates at least a limited form of free-riding; the competitor may be able to use the patent disclosure to create the incremental innovation at a lower cost than discovering the invention independently. Moreover, the competitor may be able to enter the market at a lower price, allowing her to compete more rigorously with the patent holder. The disclosure requirements, and particularly enablement, therefore, run counter to the incentive theory of patent law.

Professor Katherine Strandburg recognized this tension between the incentive to innovate and the incentive to disclose (quid pro quo) theories of the patent system.[54] Professor Strandburg recognized that the "incentive to disclose" theory is really only implicated for non-self-disclosing

50. Edmund Kitch dubbed this the "reward" theory. *See* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977).

51. *See* Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 635 (2002) ("Inventors are assumed to suffer losses when information is made public, a loss exclusive rights attempt to compensate.").

52. *See* 35 U.S.C. §§ 154(d), 122(b) (2000). *But see infra* notes 120-136 and accompanying text (discussing problems created by provisional rights).

53. *See supra* note 45.

54. Katherine J. Strandburg, *What Does the Public Get? Experimental Use and the Patent Bargain*, WIS. L. REV. 81, 105 (2004). Professor Strandburg's article does not ad-

inventions where patent protection would afford greater returns on the innovation than simply maintaining a trade secret, although trade secret protection alone was sufficient to induce creation of the innovation.[55] In other words, the patent system was not needed to incentivize the creation of the invention because trade secret law was sufficient.[56] The patent system, by affording a greater return than trade secret protection, would encourage the inventor to disclose the invention, but the "reward" theory would be irrelevant to the actual creation of the invention.[57] The patent system's role, therefore, would be to encourage disclosure.[58]

Only non-self-disclosing inventions are implicated by this analysis. This set of inventions seemingly would be small. Moreover, the only inventions that would be disclosed under the patent system are the subset of non-self-disclosing innovations for which patent protection affords more return than trade secret protection.[59] If the invention is truly non-self-disclosing, the only scenario for which patent protection is more economically beneficial than trade secret protection is if the innovator believes others will independently create the innovation during the patent term.[60] If others will not independently create the product, then trade secret protection would afford greater returns to the innovator, making rational the decision not to obtain a patent.[61] Patents provide protection against independent creation, whereas trade secrets do not.[62] If the problem is independent creation, however, the disclosure in the patent is adding very little to the public's knowledge base; others are readily able to create the invention from the state of the art without the benefit of the patent disclosure.[63] The patent has *taught* very little to the public: the invention was inevitably coming to the public regardless of the patent

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dress the intersection of either the prospect or signaling theory with enablement, as I address *infra*.

55. *Id.* at 110-11.

56. Some economists, however, take a stricter view of the incentive theory, believing that only those inventions actually induced by the patent system deserve patent protection. *See* A. Samuel Oddi, *Un-Unified Economic Theories of Patents—the Not-Quite-Holy Grail*, 71 NOTRE DAME L. REV. 267, 277 (1996) ("A causal relationship is required between the availability of the patent system and the creation of the invention: But for the patent system the invention would not have been made available to be public."). Economists would view the patent monopoly as creating social waste if the patent was not needed to induce creation of the invention. Professor Strandburg's response would be that social welfare may yet be enhanced if the patent system encouraged disclosure of the invention so as to facilitate greater innovation, in other words to facilitate the teaching function of patents. The value of such disclosure, however, appears to be minimal. *See infra* notes 96-142 and accompanying text.

57. Stanburg, *supra* note 54, at 110.

58. *Id.* at 111 ("It is in this set of circumstances, and this set of circumstances alone, that the so-called 'quid pro quo of patent disclosure' operates."); *see also Disclosure Function*, *supra* note 2, at 2015 (noting patent protection is helpful if others easily could reverse engineer the invention).

59. Strandburg, *supra* note 54, at 110-11.

60. *Id.* at 113.

61. *Id.*

62. *See, e.g.*, Am. Can Co. v. Mansukhani, 742 F.2d 314, 334 n.24 (7th Cir. 1984).

63. *Disclosure Function*, *supra* note 2, at 2016.

disclosure.[64] The fact that the patent system has encouraged disclosure, therefore, does not necessarily mean that the patent document *itself* will serve the purported teaching function that is tied to the disclosure.[65]

Consequently, the incentive to innovate theory is in considerable tension with the quid pro quo aspect of the patent system. The enablement requirement insists on a level of free-riding that is inconsistent with the role of patents to combat the public goods problem associated with innovation. Nothing about the public good story requires the need for an enabling disclosure of the invention, and indeed the free-riding aspect of a patent "teaching" something to the public of value that can be used before the expiration of the patent term seems utterly inconsistent with this theory.

2. *The Irrelevancy of a Teaching Function to Prospect Theory*

In 1977, Edward Kitch proposed an alternative function of the patent system, rooting his justification in property theory.[66] Kitch noted that broad patents frequently are awarded for innovations at an early stage of development.[67] On this foundation, innovators subsequently create commercially viable inventions.[68] Analogizing to the prospect system for precious minerals in the eighteen hundreds,[69] Kitch reasoned that issuing broad patents at an early point in development allows the first innovator to coordinate further downstream innovation in the nascent technology.[70] Kitch treats a "prospect" in the patent context as "a particular opportunity to develop a known technological possibility."[71] Early patenting therefore reduces wasteful races to invent.[72] Without earlier patenting, the duplicative efforts of competitors could dissipate any social surplus associated with the invention.[73] The first to the patent office would win all rights to the invention, while competitors would have wasted the resources in developing a commercially viable embodiment of the invention. Under Kitch's view, the existence of the patent creates an after-the-fact incentive for further innovation through the encouragement of in-

64. *See id.* at 2016 ("The primary function of the patent system is to protect inventions that are easy to reverse engineer, but information on such technology is usually available without the disclosure requirement."). Indeed, if the reason the return on the trade secret would be less than patent protection is from the disclosure, the trade secret holder would simply maintain the trade secret.

65. *See infra* notes 96-142 and accompanying text.

66. Kitch, *supra* note 50, at 267.

67. *Id.* Kitch argued that the importance of the prospect function of patents is seen in three features of the system: the scope of the awarded patent is not commensurate with the scope of the inventor's discovery; the priority and statutory bar rules encourage early patenting; and the PTO has issued many important technological patents well before the invention was ready for commercial exploitation. *Id.*

68. *Id.* at 271.

69. *Id.* at 271-75.

70. *Id.* at 276.

71. *Id.* at 266.

72. Duffy, *supra* note 49, at 440-41.

73. *Id.* at 440.

vestment to develop the technology.[74]

Any supposed teaching function via disclosure, however, plays no role in prospect theory. Kitch's view assumes that the patentee will be able to coordinate additional development of the technology, which suggests that control over the information would be required to prevent other competitors from designing around the invention or developing patentable improvements.[75] The teaching function of the disclosure is at odds with the concept of a patent as a prospect because the quid pro quo view assumes that use of the information by others is socially good and should be encouraged. Indeed, Kitch specifically distinguishes any teaching function from the views articulated in his article.[76] The disclosure obligations are consequently irrelevant to prospect theory; the prospect function would work without any obligation to disclose information.[77]

3. *Disclosure but No Teaching in Patent Signaling and Portfolio Theory*

Patents serve other purposes aside from privatizing information pursuant to the incentive and prospecting theories. Recent scholarship has demonstrated that patents can operate in the markets as a signal that "credibly publiciz[es] information."[78] The incentive and prospect theories concentrate on privatizing information surrounding the patent in order to allow the inventor to capture the rents associated with the exclusive rights afforded by the patent.[79] The quid pro quo view of patents requires disclosure of the invention but creates the incentive to disclose the minimum required to obtain patent protection.[80] In fact, "if an inventor could reap the same rents regardless of whether the invention was protected by a patent," then the inventor rationally would not choose

74. Kitch, *supra* note 50, at 276-77; *see also* Burk & Lemley, *supra* note 49, at 1600 ("[Prospect theory] emphasizes the ability of intellectual property ownership to force the efficient management of inventions and creations through licensing once they are made."). Subsequent commentators have further refined Kitch's prospect theory. John Duffy observed that Kitch failed to account for the limited term of patent rights. Thus, the prospect function is temporally limited. If patents are granted on early inventions, before they are commercially viable, then the patent term effectively will be reduced. This temporal aspect of patents makes the patent prospect begin to resemble Demseztian auctions, where the right to develop a technology would be granted before anyone races to develop the technology, avoiding wasteful duplicative races. Duffy, *supra* note 49 at 439-40.

75. *See* Duffy, *supra* note 49, at 442-43 (explaining the concept and economic waste of blocking patents).

76. Kitch, *supra* note 50, at 278 ("This private incentive to disseminate information about the invention should be distinguished from the reward for disclosure theory traditionally discussed. That theory assumes that the disclosure effect of the patent system comes from the disclosure on the public record.").

77. The communication involved in Kitch's theory requires a demonstration of what the inventor has created. The role of disclosure to show possession, and not to teach, would be relevant, but the communication discussed by Kitch is not limited to the patent disclosure. Patentees have the incentive to communicate their discovery in any manner, not simply through the patent document itself.

78. Long, *supra* note 51, at 627.

79. *Id.* at 626.

80. *Id.*

patent protection.[81] This theory is belied by the plethora of valueless patents that have been issued. Signaling and patent portfolio theories both seek to explain this seemingly irrational behavior.

Instead of simply focusing on the exclusive rights of patents, these theories suggest that persons obtain patents not solely for the right to exclude others. The existence of a patent or, more likely, a set of related patents can communicate information about the firm, the firm's research interests, and capabilities to attract investors.[82] These patent signals reduce information costs by acting as a proxy for data about a corporation through a relatively inexpensive mechanism.[83] The signal may not transmit perfect information, but its relative cheapness helps communicate useful information to the market. Accordingly, patents individually and collectively can provide information to relevant markets, such as venture capital markets, about a firm.[84] If patents can serve as such signals, then the explosion of patents, particularly seemingly valueless patents, is rational because the value of obtaining the patent comes not from its exclusive rights but instead from the reduced information costs in communicating information about the firm, a form of advertising.[85]

The portfolio can also act as a gestalt to create a "superpatent" that preserves a research area for the patent holder. In a manner akin to prospect theory—which focuses on the scope of an *individual* patent—portfolio theory suggests that a set of closely related patents can allow a firm to occupy the field and thus coordinate downstream innovations.[86] A varied portfolio can also help minimize uncertainty relating to patents, such as the scope or validity of a patent or even of patent law itself.[87] The value of any individual patent, however, is essentially irrelevant. What is important is the value of the portfolio as a whole, and the portfolio may very well have a value greater than the sum of the value of its constituent patents.[88]

While patents may reduce information costs, the role of the patent document to disclose something new to the public is irrelevant to both signaling and portfolio theories. While serving as a form of advertising in a

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81. *Id.*
82. *Id.* at 646.
83. *Id.* at 645 ("A signal in this context is just a variable with low measurement costs that observers believe is not independently distributed relative to variables presenting high measurement costs.").
84. *Id.* at 646 ("Individual patents and patent portfolios can signal many things. Individual patents can convey information directly and credibly about the invention. Patent portfolios can convey information about the lines of research a firm is conducting and how quickly the research is proceeding. The quantity and quality of the patents in the portfolio can serve as a signal of other firm attributes, as can the order in which the firm applies for the patents.").
85. *Id.* at 635 ("If inventors might gain from publicizing information in a patent, then they may choose to seek patent protection, even if the anticipated value of the exclusive rights received in return were zero.").
86. Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 7-8 (2005).
87. *Id.* at 8.
88. *Id.* at 9.

sense, the particular disclosure of any given patent is not terribly relevant to the signal.[89] The disclosure of any single patent is likely irrelevant in market signaling theory because evaluating the contents of the patent for accuracy would greatly increase costs, undermining the efficiency gains of the signal.[90]

Portfolio theory further undermines the teaching role of the patent disclosure. Portfolio theory does not emphasize patent disclosures but instead emphasizes the existence of patents and the types of patents being obtained.[91] Indeed, in portfolio theory, it is the quantity of patents that is important, not necessarily the teachings within that set.[92] Evaluating extensive patent portfolios one patent at a time would be quite costly in terms of sheer numbers and would risk eviscerating the reduced information costs the patent portfolios supposedly provide.

Moreover, others are not attempting to build on the patent's disclosure under either of these theories. The audience of signaling theory is completely different than that of the quid pro quo view of the patent system. The relevant audience for signals is investors, whereas the relevant audience under disclosure theory is technologists.[93] The signal to the market is not to advance the state of the art of the market but instead to reap pecuniary benefits to the signaler.[94] The signal primarily communicates information about *the firm* and not necessarily much about the *invention*.[95]

Consequently, patent portfolio is not concerned with the teaching function that the patent disclosure allegedly provides. While disclosing *something* is far more relevant to the signaling theory than the incentive and prospect theories, it is not tied to any enhancement of knowledge afforded by releasing the information to the public.

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89. Long, *supra* note 51, at 665-66.

90. *See id.* at 665 ("Although they may reduce information costs, patents and portfolios present their own set of information costs. . . . A firm's claim that it has patented a new scientific discovery is easy to verify along one margin (the discovery is patented), but presents higher verification costs along others (whether it is truly new or innovative)."). Patents may contain other, non-technical information that the market may find valuable. *See id.* at 647 ("Readers can often discover such tidbits as what kinds of experiments the patentee conducted in the course of testing the invention, what the experimental results were, and what complementary products (often mentioned by brand name) the patentee recommends for use with the invention."). But this disclosure has nothing to do with advancing the state of the art through the patent itself.

91. *Id.* at 648 ("Portfolios can indicate lines of research the firm is undertaking and what the firm does and doesn't consider valuable, outline a research trajectory that adumbrates fields the firm may be branching into next, disclose how fast the firm is proceeding within a particular area of research, and reveal other valuable dynamic information.").

92. *Id.* at 648-49.

93. This fact further increases the information costs associated with evaluating an individual patent for an investor: the patent is written for the PHOSITA and not for venture capitalists or other investors.

94. Long, *supra* note 51, at 648-49.

95. *Id.*

C. Do Patents Actually "Teach" Anything? Practical Reasons to Doubt the Efficacy of this Function

The quid pro quo justification for patent law suggests that patents enhance the storehouse of knowledge not only by the presence of the invention's physical embodiment in the market but also by the injection of this new knowledge into the public domain. None of the economic justifications for patents, however, support the need for disclosure. Moreover, it is not clear that patents under the status quo even *could* perform a teaching function effectively. For a variety of reasons, the courts have grossly overstated the teaching function of patent disclosures. The patent system has a number of structural flaws that inhibit the ability of a patent to perform its teaching function.

1. Experimental Use Limitations—Limited Opportunity to Learn

Patents do contain a wealth of information, and, theoretically, follow-on innovators could rely upon that disclosure to improve upon or design around a patented invention.[96] The courts seem to blindly assume that patents do perform this function. In order to utilize the information in the patent, one must be able to investigate the invention itself. Even the enablement standard itself contemplates the possibility of experimentation; the requirement is satisfied so long as experiments to use or understand the invention are not undue. Thus, to facilitate design-around and improvement innovation, one would expect a safe harbor for inventors to experiment with the invention.

Superficially, U.S. patent law does recognize such a safe harbor for experimentation in two forms. According to common law, inventors are exempt from infringement liability if their use of the invention was "solely for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry."[97] Moreover, the Patent Act provides a specific statutory defense for uses of an invention in order to prepare applications for approval by the government.[98] These two forms of experimental use will be discussed in turn.

a. Common Law Experimental Use Defense

Despite the long history of the common law experimental use defense, the Federal Circuit has essentially eviscerated it. Commentators have

96. Designing around is more of a possession concern, allowing the public to discern the scope of the right to exclude based on what the inventor possesses. Likely, the information disclosed in the patent is not necessarily new.

97. Madey v. Duke Univ., 307 F.3d 1351, 1362 (Fed. Cir. 2002). "Philosophical inquiry," given its proper historical context, actually refers to scientific inquiry. *See* Janice M. Mueller, *The Evanescent Experimental Use Exemption from United States Patent Infringement Liability: Implications for University and Nonprofit Research and Development*, 56 Baylor L. Rev. 917, 929 (2004) [hereinafter Mueller, *Evanescent Experimental Use*]. For a general discussion of the evolution of the common law experimental use defense, see *id.* at 927-36.

98. 35 U.S.C. § 271(e)(1) (2005).

well documented the Federal Circuit's hostility to the common law experimental use defense,[99] which will only briefly be repeated here. In *Madey v. Duke University*, the court concluded that the use of the invention by Duke University was not shielded by the experimental use defense because the use had commercial implications.[100] The "commercial" implication, though, was utterly irrelevant to the particular invention at issue; instead, the University's commercial interest was "educating and enlightening students and faculty participating in these projects" and "[increasing] the status of the institution and [luring] lucrative research grants, students and faculty."[101] Prior to *Madey*, many universities believed that the experimental use exception applied to them, but the Federal Circuit made clear that even educational institutions are not immune from infringement. Moreover, the court's broad interpretation of the commercial nature of the use makes envisaging any use that would qualify for the defense nearly impossible.

The absence of an effective experimental use defense severely limits the ability of the patent disclosure to "teach" anything. One can read the patent but cannot make or use the invention for purposes of exploring its function or the manner in which it works.[102] Unless the courts or Congress create a more robust experimental use defense, the ability of the patent disclosure to teach anything of worth to the public is curtailed.[103]

b. Safe Harbor of § 271(e)(1)—Statutory Experimental Use Defense

Congress, in contrast to the common law experimental use defense, has provided a limited statutory defense related to the use of patented inventions for experimental purposes. Section 271(e)(1) provides the following:

> It shall not be an act of infringement to make, use, offer to sell, or sell within the United States or import into the United States a pat-

99. *See, e.g.*, Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1023-24 (1989) [hereinafter Eisenberg, *Progress*]; Rebecca S. Eisenberg, *Proprietary Rights and the Norms of Science in Biotechnology Research*, 97 YALE L.J. 177, 220-24 (1987); Mueller, *Evanescent Experimental Use*, *supra* note 97, at 962-71; Janice M. Mueller, *No "Dilettante Affair": Rethinking the Experimental Use Exception to Patent Infringement for Biomedical Research Tools*, 76 WASH. L. REV. 1, 22-24 (2001); Maureen A. O'Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 COLUM. L. REV. 1177, 1194 (2000); Strandburg, *supra* note 54, at 97-99.

100. *Madey*, 307 F.3d at 1362-63.

101. *Id.* at 1362.

102. Seemingly, a use to demonstrate that the invention *does not actually* work could be problematic as well, notwithstanding the public interest in invalidating such a flawed patent.

103. Commentators have offered a number of suggestions for implementing a more balanced experimental use defense. *See, e.g.*, Eisenberg, *Progress*, *supra* note 99, at 1078 (articulating three circumstances eligible for the experimental use defense); Mueller, *Evanescent Experimental Use*, *supra* note 97, at 972-79 (articulating statutory experimental use factors); O'Rourke, *supra* note 99, at 1205 (articulating five factor, fair use analysis analogous to copyright fair use); Strandburg, *supra* note 54, at 119-21 (advocating a "experimenting on" versus "experimenting with" dichotomy).

> ented invention (other than a new animal drug or veterinary biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Act of March 4, 1913) which is primarily manufactured using recombinant DNA, recombinant RNA, hybridoma technology, or other processes involving site specific genetic manipulation techniques) solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use, or sale of drugs or veterinary biological products.[104]

Congress adopted this provision in 1984 to overrule the Federal Circuit's decision in *Roche Products, Inc. v. Bolar Pharmaceutical Co.*,[105] in which the court refused to apply the common law experimental use defense. The § 271(e)(1) safe harbor is part of a balance adopted by Congress that facilitates bringing generic drugs to market more readily. If generics were unable to use the patented drug until after the patent had expired to prepare their FDA applications, there would be a de facto extension of the patent term during the generic's preparation and approval period. Allowing generics to use the patented drug to prepare their FDA applications reduces this delay.

Congress, however, afforded the patentee the ability to sue generics for merely filing an application (known as an Abbreviated New Drug Application, or ANDA) with the FDA.[106] Viewed as a technical form of infringement because the drug has yet to be sold or used in a commercial sense, § 271(e) does provide jurisdiction to federal courts to decide the infringement and validity issues.[107] To facilitate the ANDA process, patent holders are required to list all of the patents covering their approved drugs in what is known as the Orange Book.[108] Generic companies can then consult the Orange Book[109] and certify, inter alia, that they do not infringe the listed patents or that the listed patents are invalid.[110] The

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104. 35 U.S.C. § 271(e)(1) (2005).

105. 733 F.2d 858 (Fed. Cir. 1984).

106. 35 U.S.C. § 271(e)(2) (2005).

107. 35 U.S.C. § 271(e)(5) (2005). The scope of the infringement provisions for ANDA litigation has been hotly contested and has been the source of considerable debate at the Federal Circuit.

108. 21 U.S.C. § 355(b)(1) (2003).

109. Litigation has erupted over whether the FDA must assure that patentees have correctly listed patents in the Orange Book and whether a cause of action exists to require the FDA to remove an inappropriately listed patent. *See, e.g.*, Apotex, Inc. v. Thompson, 347 F.3d 1335, 1348-49 (Fed. Cir. 2003); aaiPharma Inc. v. Thompson, 296 F.3d 227, 238-39 (4th Cir. 2002) (both finding no cause of action).

110. This is known as a Paragraph IV certification. There are other certifications as well. As the Federal Circuit has explained:

> Reciprocally, a generic company has an obligation to consult the Orange Book before filing an ANDA and certify that either (I) no patent information is listed in the Orange Book for the proposed generic drug; (II) that the listed patents have expired; (III) that the listed patents will expire before the generic company markets its product; or (IV) that the patents listed are invalid or will not be infringed by the generic drug (a "paragraph IV certification"). 21 U.S.C. § 355(j)(2)(A)(I)-(IV).

Glaxo Group Ltd. v. Apotex, Inc., 376 F.3d 1339, 1344 (Fed. Cir. 2004).

Orange Book, thus, supplements any public notice function served by patents, strongly suggesting that patents disclose little to the public; the Orange Book would not be needed if competitors truly were monitoring the issuance of patents and patent applications. The competitors are not learning new things about the technology, but are instead assessing the scope of the patentee's right to exclude.[111] The disclosure itself does not seem to be key in teaching the world anything or advancing the state of the art. Competitors are not likely learning anything new from the patent itself, but instead already have the ability to enter the market and are just trying to assess the scope of the patent in order to avoid infringement. The experimental use defense, thus, is not designed to facilitate innovation, but instead to permit "me too" drugs to promptly enter the market to compete with the patented drug; hoping to reduce price through competition.

2. *The Risk of Willful Infringement*

The doctrine of willful infringement provides another structural infirmity to the ability of patents to perform a teaching function. An infringer who willfully infringes a patent can be subject to treble damages.[112] A prerequisite to willful infringement is actual knowledge of the patent.[113] In fact, such knowledge triggers a duty on the part of a potential infringer to investigate their potential infringement or the validity of the patent.[114] A defense to willfulness is often an opinion of counsel that the patent is not infringed or is invalid.[115]

Of course, one cannot be a willful infringer if she does not know of the patent. Given the risk of enhanced damages, a competitor has a significant incentive *not* to review patents at all. Numerous commentators have recognized this rational ignorance[116] and its serious potential to disrupt any teaching function purportedly served by the patent system.[117] It is

111. In other words, assessing what the inventor "possesses." *See infra* notes 119-213 and accompanying text.

112. 35 U.S.C. § 284 (2005).

113. Mark A. Lemley & Ragesh K. Tangri, *Ending Patent Law's Willfulness Game*, 18 BERKELEY TECH. L.J. 1085, 1090 (2004).

114. *See* Knorr-Bremse Systeme Fuer Nutzfahrzeuge Gmbh v. Dana Corp., 383 F.3d 1337, 1343 (Fed. Cir. 2004) (en banc). Judge Dyk would have eliminated this duty, in part due to the fear that it chills the incentive for parties to review issued patents. *Id.* at 1351-52 (Dyk, J., concurring in part and dissenting in part).

115. Lemley & Tangri, *supra* note 113, at 1091-93.

116. *See, e.g.*, *id.* at 1100-01 ("Once a company becomes aware of a patent, it has an obligation to obtain a written opinion of counsel or risk later being held a willful infringer. To avoid this significant cost, in-house patent counsel and many outside lawyers regularly advise their clients not to read patents if there is any way to avoid it. What you do know will certainly harm you, they reason, so it is generally better not to know." (footnote omitted)); PATENT SYSTEM, *supra* note 2, at 64.

117. Lemley & Tangri, *supra* note 113, at 1101-02. Recent reform proposals have included efforts to mitigate this problem. *See* H.R. 2795, 109th Cong. § 6 (2005). The effectiveness of this reform can be questioned, however, because copying the invention "with knowledge that it was patented" can still result in a finding of willfulness under the proposed act.

rational for companies to intentionally avoid reviewing published patents to circumvent the potential costs of the duty to investigate and enhanced damages.[118] Moreover, even if companies are performing searches to ensure that their product does not infringe, the patent disclosure itself is not serving to inform them about the state of the art; the competitor's device has been created without reference to the patent.[119] The willfulness doctrine, therefore, creates a huge barrier to the effective operation of the patent system's disclosure function.

3. *Eighteen-Month Publication and Provisional Rights*

Even absent the willful infringement doctrine, the reality is that disclosures in patents are not timely due to delays in the publication of the patent and also often due to the patent applicant's delays.[120] Prior to the adoption of the eighteen-month publication rule, patents were kept confidential until they were issued,[121] which could be several years. By the time the patent was issued, the patentee or others likely had already placed a device on the market, or other publications may have provided the public with the same information. Thus, the patent disclosure was an inadequate source of technical information, due to the delay in actually disclosing the invention.

The adoption of the eighteen-month publication rule mitigated this concern to some degree.[122] Generally, U.S. patent applications are published after eighteen months.[123] The information contained in the application is thus released to the public in a more timely fashion. Indeed, because the *application* and not merely the issued patent is issued, seemingly there will be an even greater wealth of information emerging from the patent office.[124] Superficially, therefore, the publication of applications appears to enhance the patent's teaching function.

Such faith in early publication may be overstated, however. First, not all applications are published. The U.S. system allows those applicants who are only filing in the United States to opt out of the publication requirement.[125] A recent study suggests that eleven percent of U.S. applications are not published.[126] Second, even published applications contain dated information. Minimally, the information contained in the

118. Lemley & Tangri, *supra* note 113, at 1100-01.

119. *Disclosure Function*, *supra* note 2, at 2022 ("To the extent that innovators are reading patents only to perform clearance searches for new products, however, the patent system is not causing R&D spillovers or reducing duplicative research. . . .").

120. PATENT SYSTEM, *supra* note 2, at 63.

121. *See, e.g.*, Lear, Inc. v. Adkins, 395 U.S. 653, 669-73 (1969).

122. 35 U.S.C. § 122(b) (2005).

123. *Id.*

124. Of course, such wealth could reduce the value of the disclosures if the cost to monitor all of the published applications became inordinately high, which again would reduce the supposed "teaching" function of patents.

125. 35 U.S.C. § 122(b)(2)(B) (2005).

126. A significant number of applicants take advantage of this option. *See* PATENT SYSTEM, *supra* note 2, at 64 (noting eleven percent of applications opted out of eighteen-month publication in 2002).

patent application is eighteen months old.[127] Further compounding this delay is the one-year grace period of 35 U.S.C. § 102(b).[128] If an inventor provides a description of her invention in a printed publication, she has up to one year to file her patent application.[129] As a result, the information disclosed in the patent can be up to two and a half years old relative to the date the information entered the public domain. The use of provisional applications risks even further aging of the application's disclosure. A provisional application contains only the written description section of the patent, and there are no claims.[130] This application preserves the applicant's filing date without sacrificing the patent term because the term does not begin until the applicant converts the provisional application into a non-provisional application.[131] An applicant has twelve months to make this conversion.[132] Thus, if the applicant publishes an article, files a provisional application one year later, and subsequently files the non-provisional application another year later, then the published patent application would contain information that is three and a half years old. Such aged information would do little to enhance to the storehouse of knowledge.

Even aside from this practical reason to not consult applications, there remains a legal disincentive for reviewing published applications. Congress has provided patentees with provisional rights, which afford the patentee compensation for infringements occurring after the publication of the application but before the issuance of the patent if the patent eventually issues.[133] A patentee is entitled to a reasonable royalty from anyone who infringes the claims in the patent application[134] if "the invention as claimed in the patent is substantially identical to the invention as claimed in the published patent application."[135] Liability arises, however, only if the infringer has actual notice of the patent application.[136] Mere publication of the application will not constitute constructive notice, as is the case for the infringement of an issued patent. Rather, the infringer must actually be aware of the patent application.[137]

The knowledge requirement, similar to the situation for willful infringement, creates an additional incentive for rational ignorance. If an inventor actually *does* review the published applications for technical information, she now potentially will be liable to pay a reasonable royalty if

127. 35 U.S.C. § 122(b)(1)(A) (2005).
128. 35 U.S.C. § 102(b) (2005).
129. 36 U.S.C. § 102(3) (2005). The grace period also applies to third party activities.
130. 35 U.S.C. § 111(b)(2) (2005).
131. *Id.* § 111(b)(5).
132. *Id.*
133. 35 U.S.C. § 154(d) (2002).
134. *Id.* § 154(d)(1).
135. *Id.* § 154(d)(2). No court has addressed what the term "substantially identical" means as of this writing.
136. *Id.* § 154(d)(1)(B). The application must also be published in English if provisional rights are triggered by the publication of an international application. *Id.*
137. *Id.*

she engages in any infringing activity prior to the patent's issuance.[138] So, it is wise for her to play ostrich and never actually review the applications that are being published. Provisional rights therefore serve as an additional disincentive to look at the published applications, further undermining any supposed "teaching" function served by patent disclosures.

4. The Moribund Reverse Doctrine of Equivalents

Further inhibiting the ability of patent disclosure to teach effectively is the moribund reverse doctrine of equivalents. The reverse doctrine of equivalents is a defense to literal infringement; although the infringer's device technically falls within the literal scope of the patent claim, the doctrine precludes liability if the infringer's device is substantially different from that claimed in the patent.[139] In essence, if the competitor has done something vastly different from the patentee, despite what the literal terms of the patent may say, she will not infringe the patent.

A robust reverse equivalents doctrine could enhance the teaching function of patents. If a competitor knows that she may escape liability under the doctrine, she has an incentive to build upon—and beyond—the work of the patentee. This possibility could create an incentive to review patents in order to "one up" the inventor, thus creating a true spur to design-around activity. In fact, because the competitor would not be infringing, the doctrine could also serve to mitigate the chilling effect of the willfulness doctrine. One must actually infringe for there to be enhanced damages, so the safe harbor that the reverse doctrine of equivalents could provide would help mitigate the risks associated with reviewing patent disclosures.

The reverse doctrine of equivalents, however, is effectively dead. While the doctrine has found many fans in the academy,[140] the courts, particularly the Federal Circuit, have not been receptive to it. The Federal Circuit has yet to affirm a judgment of non-infringement on this basis.[141] The court instead seems to view the doctrine as essentially dead, despite its origins in Supreme Court case law.[142] Without this potential safety valve, there is even less reason for a competitor to review patents.

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138. *Id.*

139. Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 608-09 (1950).

140. *See, e.g.*, Dan L. Burk & Mark A. Lemley, *Quantum Patent Mechanics*, 9 LEWIS & CLARK L. REV. 29, 32 (2005); Lemley, *Economics of Improvement*, *supra* note 49, at 1010-13; Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 860-68 (1990).

141. Tate Access Floors, Inc. v. Interface Architectural Res., Inc., 279 F.3d 1357, 1368 (Fed. Cir. 2002).

142. *Id.* ("Even were this court likely ever to affirm a defense to literal infringement based on the reverse doctrine of equivalents, the presence of one anachronistic exception, long mentioned but rarely applied, is hardly reason to create another."); *see* Burk & Lemley, *supra* note 49, at 1657 ("The doctrine is rarely applied, and a recent Federal Circuit decision casts its future in doubt.").

D. PATENTS: INEFFECTUAL TEACHERS

The courts remain enamored with the quid pro quo view of the patent system, and the disclosure obligations are the central tenets of this principle. Not only are the disclosure obligations inconsistent with the theoretical justifications of patent law, but the current structure of the patent system undermines the ability of patents to actually perform this function. This is not to say that patents do not play any teaching function whatsoever. In some technological fields, it could be that people consult the patent document to learn new things, although the above analysis strongly suggests such review to be highly unlikely. Patents can provide a sort of feedback loop to encourage teachings via pre-patent disclosures and publications. An inventor who anticipates obtaining a patent on an invention will be more willing to publish a scientific article or other sort of disclosure to the public, because she knows her invention will eventually be protected by a patent and not by a trade secret. The pre-patent disclosure will not cost the inventor anything because the subsequent patent will provide protection. Of course, this feedback loop further supports the conclusion that the disclosure in the patent itself is not terribly relevant to enhancing the storehouse of knowledge, because the inventor would have disclosed the information in a medium other than the patent itself.

Thus, while stating that patents *never* serve a teaching function is too strong of a statement, the courts have grossly overstated the true extent of this function. Given the teaching function's inconsistency and irrelevance to patent theory, basing patent policy and doctrine on the quid pro quo, as the courts do, is a flawed approach. The courts should retreat somewhat from their reliance on the teaching function of patents as justifying their conclusions.

IV. ENABLEMENT AS "POSSESSION" IN CURRENT PATENT LAW

The practical and theoretical infirmity of this teaching function begs the question, however, of why we maintain the disclosure obligations in patent law. Both the prospect and incentive theories recognize the importance of the patent's exclusive rights, which are a form of a property right. An important concept in property generally is that of possession, which serves to demarcate that which is yours and that which is someone else's. In the case of patent law, the "thing" possessed, however, is intangible. The invention is not necessarily a particular embodiment necessarily but more the idea of the invention. Possession of this inchoate idea must be demonstrated somehow, and the disclosure obligations serve this function. The disclosure obligation communicates to the world exactly what the innovator has created.

Of course, demonstrating the possession of an intangible idea is difficult. One could describe an idea but not necessarily truly be in possession of it. For example, the idea of teleportation has existed in science

fiction, such as in Star Trek, for some time. Simply having the idea of teleportation, however, does not mean that those authors are in possession of a teleportation device. Instead, the key aspect of possession is whether or not the author can actually make a functioning device. Thus, the best evidence of possession would be either the inventor physically creating the invention or, at least, providing a description that is clear enough to enable someone else to build it.[143] In other words, the best way to demonstrate possession is to provide an enabling disclosure, as required under paragraph one of 112.[144]

Enablement performs the role of demonstrating what the inventor possessed as her invention when filing her application. Thinking of enablement as demonstrating possession, as opposed to providing an informative disclosure, has significant descriptive and normative potential in patent law which has previously been unrecognized. This section will explore the present, explicit uses of enablement and explain them through the "possession" paradigm, in contrast to the "teaching" view. This shift has significant descriptive power, explaining much of current patent law doctrine. It also has considerable prescriptive force, suggesting ways to modify existing law to embrace the centrality of possession to patent law and enablement's essential role in demonstrating possession.

A. Viewing Enablement as Showing Possession of an Invention Provides a Better Theoretical Fit

Considering enabling disclosures as demonstrating possession of the invention helps explain why we continue to require disclosure of inventions despite the apparent inconsistency with patent theory. Showing possession of an invention is an important aspect of the incentive, prospect, and portfolio theories.

1. The Role of Possession in Incentive Theory

The incentive theory is premised on the idea that an inventor can recoup her sunk research and development costs by being granted the right to exclude others from using her invention. Of course, to effectuate this function, both the inventor and the public must know the scope of the right to exclude. The right should generally be commensurate with what the inventor actually invented or possessed. Otherwise the patentee would receive an unjustified windfall and, through the exclusive rights, this could inhibit further innovation in his technical field.

Enablement as a test for possession is consistent with this aspect of incentive theory. It can play an important role in communicating to competitors the scope of the rights to exclude. If considerable uncertainty attends the patent, then third parties are unable ex ante to assess what

143. 35 U.S.C. § 112, ¶ 1 (2005).
144. *Id.*

constitutes the patentee's territory.[145] Those parties may waste resources in duplicative and infringing efforts.

Alternatively, competitors can effectively design around the patent effectively if the scope is known. Designing around, however, actually is derivative of possession; it does not depend on any teaching function of the patent itself. It instead is premised on certainty surrounding the patent rights. A competitor knows what the inventor possesses via the patent and will try to create something that the inventor did not possess. There is no denying that this may create incremental and follow-on innovation, but the driving force is the scope of the patent right and not the teaching of the patent.[146] The technology necessary to design around, for the aforementioned reasons, is likely already within the public domain. Instead, the disclosure of what the inventor possessed provides guidance to competitors on how to avoid the patent.

Public notice, of course, presumes that third parties are actually reading patents, when there is a strong reason to believe they are not. The ability of patents to serve their public notice function is undermined by current patent law. Thus, calls to alter issues such as willful infringement are well-rooted, not only in terms of enhancing the teaching function of patents but also in terms of encouraging reliance on patents in assessing the scope of the right to exclude.[147]

2. *Prospect Theory and Possession*

The role of enablement in demonstrating possession is also important in the prospect theory for reasons similar to the incentive theory, although the implications vary significantly. Prospect theory holds that broad patents should be granted early in the development process to allow the inventor to coordinate later developments, avoiding wasteful duplicative efforts. Unlike the incentive theory, which would consider design-around efforts helpful, the prospect theory views the patent holder to be in the best position to control and develop downstream improvements. Design-around should not be encouraged. While this contention is debatable,[148] the need for clarity as to the scope of the prospect right is essential. If the patent is supposed to act as a significant "keep out" sign, then the rights must be clear. Enablement as demonstrating possession again can serve this role by delineating the appropriate scope of the patent.

The prospect theory, though, takes a broader view of the right to exclude than the incentive theory. If a patentee is meant to coordinate downstream improvements on her technology, then seemingly the patent

145. Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 468 (2004).

146. *Id.*

147. Of course, a patentee can always provide actual notice to competitors by notifying them of the patent believed to be infringed.

148. *See generally* Lemley, *Justifications*, *supra* note 47. The existence of blocking patents belies the prospect theory's view of the patent system.

scope should be interpreted broadly and likely should include prophetic or even equivalent improvements. As the recent case law regarding the doctrine of equivalents makes clear, such an expansive scope creates considerable uncertainty. Enablement may provide a method of demonstrating not only possession but also the breadth of that possession, thereby allowing competitors to know what is within the scope of the prospect.[149]

3. *Signaling and Portfolio Theory*

Signaling theory is also more consistent with viewing enablement as a measurement of possession, as opposed to a mechanism for advancing the state of the art. The patent is to act as a signal to the market, not to technologists. What the market wants to know is whether the firm has something of value or is innovative. At the root, then, of signaling theory is an attempt by the firm to disclose what it possesses through low cost mechanisms so that investors will commit financial resources. The patent may also signal the direction the firm intends to follow, but the signal's audience is actually concerned with the patent's potential reward in terms of return rather than with that disclosure's technical details. The market wants to know what the firm possesses; it does not want to learn from or improve upon what the firm has created. The use of an enabling disclosure to demonstrate possession is thus entirely consistent with and supportive of signaling theory.

Enablement's role in demonstrating possession of the invention is also consistent with portfolio theory, although, with its focus on the quantity of patents and not the content of individual patents, portfolio theory does not seem concerned with the extent of the disclosure. At some level, the disclosure is important even in portfolio theory in order for the collection of patents to serve its "superpatent" status; competitors and infringers must have some ability to assess the scope of the portfolio's exclusive rights. This is more appropriately a view of disclosure as possession—what the company has invented collectively as demonstrated by the patents in the portfolio. Given the focus on numbers in portfolio theory, the incentive to obtain many patents could even further undermine any alleged teaching function, because the wave of patents would seem to make the actual use of the patent disclosure as an educational source rather problematic due to higher search costs. Consequently, embracing a possession-based view of disclosure, and particularly of enablement, is more consistent with the signaling and portfolio theories.

4. *Possession as Facilitating Public Notice, the Federal Circuit's Favorite Mantra*

The centrality of possession in patent theory explains why patent systems around the world continue to maintain disclosure obligations and

149. For enablement's role in limiting the claim scope, see *infra* notes 198-213 and accompanying text.

particularly explains the requirement for an enabling description of the invention. In all of the theories of patent law, the possession view helps provide needed public notice to third parties. This theoretical justification finds fruition in recent Federal Circuit jurisprudence, which has come to emphasize the public notice function that patents serve.[150] The Federal Circuit views patents as providing notice to the public of the scope of the inventor's right to exclude.[151]

Public notice has nothing to do with what the patent would "teach" the world in terms of education. Instead, it relates to the role of the patent in providing the "fence" that demarks the patentee's right to exclude and does not relate to the information the patentee has disclosed to further innovation. Although the court treats public notice and the teaching function as the same, there are in fact subtle differences. Teaching assumes that the patent discloses new information into the public domain to inform others. The public notice function of the patent system does not require that the disclosed information be new in any sense; the information may have been independently created or discerned from sources other than the patent. Public notice, instead, is concerned with the extent of the right to exclude, which should be commensurate with what the inventor has actually invented and had in her possession at the time of the application. The public's interest is not so much about learning something new as it is about assessing the scope of the inventor's right to exclude in order to safely navigate the technological waters. The Federal Circuit's emphasis on public notice is consistent with the view that disclosure is mostly concerned with demonstrating possession of the invention.

B. Enablement as Demonstrating Possession in Current Law

The idea of enablement demonstrating possession of the invention is not in and of itself a new concept. It is present in certain areas of patent law, such as anticipation and claim construction. Even in these recognized areas, however, the courts and commentators have failed to realize the full robustness of possession's centrality to patent law.

1. Enablement as Possession in Anticipation

Patents are only granted for inventions that are not already known in the prior art. If an invention is not novel, then it is anticipated by the prior art. Anticipation is a strict standard because the invention as precisely claimed must have existed identically in the prior art to be anticipated.[152] Anticipation can occur if the invention has been physically created prior to the patent applicant's creation or if it has been described

150. *See, e.g.*, Phillips v. AWH Corp., 415 F.3d 1303, 1319 (Fed. Cir. 2005) (en banc); *In re* Wallach, 378 F.3d 1330, 1334 (Fed. Cir. 2004).

151. *Wallach*, 378 F.3d at 1334.

152. The traditional forms of prior art references are printed publications or issued patents, both in the United States and abroad. Other forms of prior art are patents that have been abandoned to the public, 35 U.S.C. § 102(c), patent applications which eventually issue or which the PTO publishes, 35 U.S.C. § 102(e), derivation of the invention from a

in a qualifying printed form. In other words, if the prior art places the PHOSITA in possession of the claimed invention through a physical embodiment or a written disclosure, then it anticipates that invention. Again, possession is central to anticipation law, and enablement is particularly essential to making this determination.

Section 102 of the Patent Act defines what constitutes a prior art reference.[153] Presently, however, § 102 is a jumbled mess of various rules that prescribe the conditions necessary for an activity or publication to qualify as prior art.[154] The various provisions in § 102 differ in the timing of events that trigger the date when a publication or activity serves as a prior art reference.[155] Some activities are prior art if they occur before the date that the inventor created the invention, which reflects the United States' first-to-invent approach to determine who is entitled to a patent.[156] Other acts or publications qualify as prior art if they occur at a date one year prior to the inventor filing her application, regardless of when she created her invention.[157] These prior art provisions act as a bar to the patent because they preclude obtaining a patent even if the inventor in fact created the invention first.

By concentrating on the central role that possession has in anticipation, § 102 becomes somewhat clearer. Moreover, this viewpoint creates a more theoretically and practically accessible basis for assessing § 102, which could serve as a basis to simplify this complex and perplexing provision. The subsections of § 102 can be functionally categorized by distinguishing activities of third parties from those of the inventor. Third-party activities that place the public in possession of the invention will anticipate the invention. Inventor activities that either demonstrate that the inventor herself has placed the public in possession of the invention or show an inappropriate delay on the part of the inventor to file her patent application may render the inventor's application anticipated. The following subsection explores this dichotomy as it relates to possession and enablement.

a. Third-Party Activities Placing the Public in Possession of the Invention

Third parties can place the invention into the public's possession by actually building the device or disclosing the device in some way that allows others to make it. This latter form is the enablement doctrine serving to show the public's possession of the inchoate idea of the

previous inventor, 35 U.S.C. § 102(f), or evidence of a prior invention by another party, 35 U.S.C. § 102(g).

153. 35 U.S.C. § 102 (2005).

154. *Id.*

155. *Id.*

156. *Id.* § 102(a).

157. *Id.* § 102(b).

invention.[158] The following section explores these two categories of prior art: possession by physically reducing the invention to practice and possession by providing an enabling description. The law in this context is not concerned with whether the prior art *actually* taught something to this particular inventor or to the public more broadly, but is instead concerned with whether, objectively without reference to any particular applicant, the invention was already in the public domain. Enablement in this context is important solely to prove that the public possessed the invention prior to the patentee.[159]

Various parts of § 102 catalog the third-party activities that serve as prior art. Some of these forms of prior art involve the third party placing the public in actual possession of the invention because the party has created a physical embodiment of it.[160] In contrast, other parts of § 102 prescribe as prior art third-party activity that places the public in possession of the invention through an enabling public disclosure of the invention.[161] These provisions vary as to their timing, however. Some are tied to the applicant's invention date, reflecting the United States's first-to-invent system; the relevant third-party acts must have occurred prior to the date that the patent applicant invented the relevant device or method.[162] For others, the relevant triggering date is the critical date, which is the date one year prior to the patent application date.[163] If third parties are publicly in possession of the invention prior to the critical date, regardless of whether the patent applicant invented first, then the patent is invalid. These statutory bars are exceptions to the first-to-invent system because the applicant may be precluded from obtaining a patent even if she was the first to invent the device.

An applicant therefore can be denied a patent if the public was in actual possession of the claimed invention before either the applicant's date of invention or the critical date due to third-party activities. Section 102(a) prescribes that a patent cannot issue if the invention was "known or used by others" in the United States before the invention date of the relevant applicant.[164] Similarly, § 102(b) bars a patent if the claimed invention was in public use in the United States more than one year before the filing date of the patent application.[165] To be "in use" or to be "known or used," someone must have physically constructed an embodiment of the invention. To qualify as prior art, however, this demonstration of actual, physical possession of the invention by third parties must

158. *See, e.g.*, Elan Pharm., Inc. v. Mayo Found. for Med. Educ. and Research, 346 F.3d 1051, 1054 (Fed. Cir. 2003).

159. *Id.* at 1055.

160. 35 U.S.C. § 102(a)-(b).

161. *Id.*

162. *See* 35 U.S.C. §§ 102(a), (e), (f), & (g).

163. *See, e.g.*, Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 57-58 (1998).

164. 35 U.S.C. § 102(a).

165. *Id.* § 102(b).

be accessible to the relevant public.[166]

These provisions also provide for the demonstration of possession by the public if the third party discloses an enabling description of the invention. Printed publications and patents are § 102(a) references if they are published before the date of invention. Section 102(e) creates prior art for issued patents or published applications where a third party has filed her application before the inventor's date of invention.[167] Section 102(f) prescribes that an inventor cannot in essence steal the invention from someone else, but to count as "theft," the communication from the third-party to the inventor must enable the creation of the invention.[168] In contrast to these first-to-invent provisions, § 102(b) references are any printed publications, issued patents, or issued patent applications that are published more than one year before the date of the inventor's application for the patent.[169] All of these provisions preclude patentability when the prior art demonstrates that the public was in possession of the invention pursuant to an enabling disclosure.[170]

Section 102(b) contains another provision that again emphasizes enablement's essential role in demonstrating possession. If third parties have offered to sell the invention in the United States more than one year before the application date, then the applicant cannot obtain a patent.[171] In order for an invention to be on sale, it must be the subject of a formal commercial offer for sale,[172] and the invention must be ready for patenting.[173] An invention is "ready for patenting" if the creator has actually made the invention, called a "reduction to practice" in patent parlance, or if there are diagrams that would allow one of ordinary skill in the art to make the invention.[174] I have previously argued, and the Federal Circuit

166. *See, e.g.*, *In re* Klopfenstein, 380 F.3d 1345, 1348 (Fed. Cir. 2004). Reform proposals suggest codifying the accessibility requirement. *See* H.R. 2795, 109th Cong. § 3 (2005).

167. 35 U.S.C. § 102(e). The reasoning for treating the application as prior art effectively on the date the application is *filed*, and not when it is published, is that delays at the PTO should not justify allowing two patents on the same invention to issue. Theoretically and ideally, the application could mature into a patent instantly. Realistically, the review process takes time, and notwithstanding that another inventor could create the invention while the application is kept confidential, that administrative delay should not entitle the later inventor to a patent. *See* Alexander Milburn Co. v. Davis-Bournonville Co., 270 U.S. 390, 400-01 (1926).

168. *See, e.g.*, 35 U.S.C. § 102(f); Int'l Rectifier Corp. v. IXYS Corp., 361 F.3d 1363, 1376-77 (Fed. Cir. 2004).

169. 35 U.S.C. § 102(b).

170. *See, e.g.*, SmithKline Beecham Corp. v. Apotex Corp., 403 F.3d 1331, 1342-43 (2005).

171. 35 U.S.C. § 102(b).

172. Rotec Indus., Inc. v. Mitsubishi Corp., 215 F.3d 1246, 1255-56 (Fed. Cir. 2000). *But see* Timothy R. Holbrook, *Liability for the "Threat of a Sale": Assessing Patent Infringement for Offering to Sell an Invention and Implications for the On-Sale Bar to Patentability and Other Forms of Infringement*, 43 SANTA CLARA L. REV. 751, 800 (2003) [hereinafter Holbrook, *Threat of Sale*] (arguing for a standard based on "commercialization" rather than a formal commercial offer).

173. Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 67-68 (1998). Although *Pfaff* dealt with the situation where the *inventor* made the commercial offer to sell the invention, §102(b) also applies to public uses and offers to sell by third parties.

174. *Id.*

subsequently agreed, that this latter standard is essentially the enablement standard of § 112.[175] Again, enablement is serving to demonstrate whether the third party was in possession of the invention when she made the offer to sell. The Supreme Court made it clear that this possession can be demonstrated without a physical embodiment.[176]

The last provision in § 102(g) further evinces enablement's crucial role in establishing the possession of the invention by the public. Section 102(g) generally governs priority contests that determine who should be awarded the patent among competing applicants for patents covering the same device.[177] Section 102(g)(1) is limited solely to interferences, the administrative proceedings at the PTO by which the PTO determines which of the inventors will be awarded the patent.[178] It expressly does not serve as a source of prior art.[179]

Section 102(g)(2), in contrast, can be a source of prior art; if a third party created the invention before the applicant without abandoning, suppressing, or concealing it, then the applicant cannot obtain a patent.[180] Central to assessing who is the "first to invent" is establishing on what dates the parties conceived of the invention. Generally, the first to conceive is viewed as the first to invent.[181] Conception is a term of art that requires the inventor to demonstrate that she had the mental idea of the complete invention as claimed in the patent.[182] In order to prove conception, the evidence must demonstrate a communication of the idea in a way such "that one skilled in the art could understand the invention."[183] In other words, there must be evidence of an enabling description of the mental idea in order to demonstrate that the applicant possessed the invention.[184]

The provisions of § 102 relating to third-party activities essentially delineate circumstances when the public is in possession of the invention by a physical or descriptive disclosure of the invention. At no point is the law concerned with whether the inventor subjectively learned anything

175. *See* Holbrook, *More Things Change*, supra note 9, at 967-74 (arguing that the enablement standard of § 112, ¶ 1 should be used for the on-sale bar analysis); *see also* Janis, *supra* note 6, at 71 ("For example, assessing 'possession' by way of the *Pfaff* standard appears to call explicitly for an enablement analysis."). The Federal Circuit has embraced this approach. *See* Space Sys./Loral, Inc. v. Lockheed Martin Corp., 271 F.3d 1076, 1080 (Fed. Cir. 2001) ("[W]hen development and verification are needed in order to prepare a patent application that complies with § 112, the invention is not yet ready for patenting.").

176. *Pfaff*, 525 U.S. at 66.

177. 35 U.S.C. § 102(g) (2005).

178. *Id.* § 102(g)(1).

179. *See id.* (expressly only applying "during the course of an interference").

180. *Id.* § 102(g)(2).

181. The "first to invent" is the first to conceive who either is first to reduce to practice or who is diligent in reducing the invention to practice, even if she does so after someone else does. *Id.*

182. Burroughs Wellcome Co. v. Barr Labs., Inc. 40 F.3d 1223, 1228 (Fed. Cir. 1994).

183. *Id.*

184. *See* Field v. Knowles, 183 F.2d 593, 600-01 (C.C.P.A. 1950). The inventor need not know whether his idea will actually work, however; thus, the conception need not demonstrate the utility of the invention. *Burroughs Wellcome*, 40 F.3d at 1228.

new from the prior art; indeed, the inventor's actual awareness of the prior art is utterly irrelevant to assessing the novelty of the invention. Section 102 confirms that enablement's primary function is *not* to teach or inform the public, but instead to prove possession.

b. Activities by the Applicant Constituting Prior Art

Section 102 also governs activities by the patent applicant that show she has allowed the public to come into possession of the invention. The obligations on applicants, however, are more stringent; she can lose the right to the invention even if she has not placed the public in possession of the invention.[185] Enablement still has a role to play in these preclusion contexts as well, even though these provisions may depart from the traditional view of prior art as demonstrating what was in the public domain.

Many third-party acts that serve to anticipate a claimed invention also anticipate if performed by the applicant. There are some acts by patent applicants, however, that would not invalidate a patent claim if done by a third party. This difference is seen significantly in the public use and on-sale bars of § 102(b).[186] If uses by a third party are secret, that use will not bar or invalidate the patent. In contrast, secret uses of inventions by the applicant may anticipate the invention.[187] Although this disparate result may seem odd, precluding patents for applicants who have secretly used the invention serves other policy considerations, such as encouraging the applicant to file promptly at the PTO and preventing the applicant from appropriating the benefits of her invention beyond the patent term.[188] We want to encourage inventors to act in timely and appropriate ways, and the potential loss of the patent right is the spur to induce the inventor's behavior.[189] These policy concerns are not at issue for third parties who have not availed themselves of the patent system. With third parties, the only concern is whether the public is in possession of the invention.

Even with secret uses constituting invalidating acts, central to the analysis is a demonstration, through an enabling disclosure, that the applicant was in possession of the invention. To trigger the on-sale bar or the public use bar, the invention must still be ready for patenting; the inventor must be in actual or constructive possession of the invention.[190] It is at this point that the triggers are viewed as appropriate to subject the inventor to the possible pernicious consequences of failing to timely file an application.

185. Necessarily some of § 102's provisions *only* apply to third-party activities. If the provision is keyed to the date of invention, then it would be impossible for the inventor to disclose the invention to the public *before* she has actually created it. *See, e.g.*, 35 U.S.C. § 102(a) (only acts "by others" constitute prior art).

186. 35 U.S.C. § 102(b).

187. *See* Invitrogen Corp. v. Brocrest Mfg., 424 F.3d 1374, 1382-83 (Fed. Cir. 2005).

188. *See* Holbrook, *More Things Change*, *supra* note 9, at 943 (discussing policies underlying on-sale and public use bars).

189. *Id.* at 943-44.

190. Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 67-68 (1998).

Section 102 contains other consequences that attend acts or omissions by the applicant that implicate enablement as a form of showing possession. Section 102(f) clarifies that an applicant cannot obtain a patent if she has taken the idea from a third party, regardless of whether that communication is public in nature.[191] Thus, confidential, non-public communications can anticipate the applicant's claims. The communication between the applicant and the third party, however, must demonstrate that the third party, and not the applicant, was the first to possess the invention. To prove this fact, the third party's communication to the applicant must enable the practice of the invention.[192] This use of the enablement doctrine is, in one sense, "teaching": the applicant has learned of the invention from someone else. The knowledge may not be generally accessible to the public.[193] The actual concern, however, is that the applicant is not truly the first to possess the invention, in derogation of the first-to-invent system of the United States. The requirement of an enabling communication demonstrates that the third party was the first to possess the invention and not the applicant.[194]

Consequently, the provisions of § 102 that relate to acts by the patent applicant are also primarily concerned with demonstrating possession, either by the inventor in a manner that suggests she should be precluded from obtaining the patent or by third parties from whom the applicant has inappropriately taken the invention. Enablement in all of these contexts is used to demonstrate this possession.

c. Possibilities for Reform

The above analysis suggests some possible ways that the use of enablement as possession could greatly simplify the law of anticipation. The key question is whether the public or the inventor is in possession of the invention, which is demonstrated by a physical embodiment or an enabling description of the invention prior to the relevant priority date: the critical date or the invention date. The proper dichotomy, in lieu of the confusing structure of § 102, is to bifurcate activities by third parties, where there must be some level of public accessibility, from those of the inven-

191. 35 U.S.C. § 102(f).

192. *See, e.g.*, Int'l Rectifier Corp. v. IXYS Corp., 361 F.3d 1363, 1376 (Fed. Cir. 2004).

193. Indeed, if it was accessible to the public, likely the communication would qualify under one of the other provisions of § 102.

194. Under this analysis, § 102(c) and (d), dealing with abandonment of inventions and delays in filing applications in the United States, are a bit anomalous. In my view, they are also irrelevant and could be deleted from the patent act. Abandonment rarely, if ever, happens, and such an act likely is covered by other prior art provisions. Problems created by delays in filing applications in the United States after filing abroad have been mitigated by the priority provisions of the Paris Convention and the Patent Cooperation Treaty. These international agreements have eviscerated the usefulness of § 102(d). Recent reform legislation also seems to agree with this perspective by calling for the elimination of these provisions. *See* The Patent Act of 2005, H.R. 2795 109th Cong. (2005); *see also* Wendy H. Schacht & John R. Thomas, CRS Report for Congress, *Patent Reform: Innovation Issues*, at 18-20 (July 15, 2005), *available at* http://patentlaw.typepad.com/patent/RL32996.pdf (last visited July 22, 2005).

tor, whose own secret activities will preclude patent protection because she has failed to timely file an application. Priority for third party activities would be the date the activity became public through publication of an article, a public use, or an attempt to commercialize the invention, keyed to either the applicant's invention date or the critical date. For issued patents or published patent applications, the relevant date for priority purposes would be the application date, akin to § 102(e).[195]

Recent proposals to amend § 102 comport favorably with this refined view of the prior art. The proposed act emphasizes the role of enablement and bifurcates acts by the inventor and third parties. For example, pending legislation would alter the grace period under § 102(b) depending upon if it is the acts of the applicant, thus receiving a grace period, or third parties, thus providing no grace period.[196] Moreover, the reform efforts streamline the prior art provisions in lieu of the ad hoc statutory scheme presently in existence. The Reform Act's proposals, therefore, take the broader, possession view of the prior art instead of myopically focusing on statutory technicalities. The above analysis provides support for these reform efforts because § 102 is essentially designed to discern whether the public or the inventor possessed the invention prior to the relevant triggering date.

2. *Enablement as a Constraint on the Scope of Patent Claims*

The role of possession is not only relevant to ascertaining the novelty of a patent claim, it is also important in assessing the scope of those claims. A patent should not cover more than what the inventor possessed in an objective sense. His patent reward should be commensurate with the scope of his innovation. Otherwise, the patentee would be unduly rewarded for his invention through the granting of broad patent rights and might preclude others from reaping the benefit of subsequent innovations.

Enablement doctrine performs this role of confining the scope of the claims to what the inventor actually possessed. Naturally, a claim that is not enabled is invalid, but enablement also independently constrains the scope of the claim as a matter of claim construction.[197] The patentee is entitled to a scope which is commensurate only with her disclosure. This limit on the scope is particularly important in unpredictable art fields. For example, if a patentee discovers a cure for ovarian cancer, she likely will not be able to claim curing *all* forms of cancer.[198] She can only claim

195. 35 U.S.C. § 102(e).

196. *See* Patent Act of 2005, H.R. 2795 109th Cong. (2005); *see also* Schacht & Thomas, *supra* note 194, at 17.

197. *Cf.* Robin Feldman, *The Inventor's Contribution*, 2005 UCLA J. OF LAW & TECHNOLOGY 6, ¶¶ 55-56 (distinguishing "did the inventor society give enough" as a validity question and "how much should the inventor receive" as a scope issue).

198. *Cf. In re* Wright, 999 F.2d 1557, 1562-64 (Fed. Cir. 1993) (rejecting as unenabled claims for a vaccine to all RNA viruses, including the HIV virus, but allowing claims directed to a specific working example).

that which the PHOSITA objectively recognized would be in the inventor's possession.[199]

Some accommodation is made in claim scope for prophetic embodiments, which are forms of the invention that the patentee did not actually invent but which would be within the scope of her disclosure. In other words, the PHOSITA, reading the patent, would know that the inventor was in constructive possession of those embodiments, although she never actually possessed them. This doctrine reduces the need for the patentee to disclose every potential variation of the invention if those variations would be within the grasp of one of ordinary skill of the art, as measured by the enablement standard. To require disclosure of every variant would be extremely costly and burdensome to both the applicant and the PTO.

These prophetic examples cannot allow the patent claim to extend beyond what the inventor possessed. Undue patent scope could have a chilling affect on others who may actually be investigating how to create the prophetically claimed invention when the inventor herself may not be able to do so, or to further develop the patentee's invention.[200] Enablement provides the standard for balancing these competing interests.[201]

Claim construction would thus be directly limited by enablement. In order to literally infringe the patent, the patent would have to enable the accused device, thus showing that the patentee had placed the PHOSITA in possession of it. This could be viewed as a part of claim construction: the literal scope of the patent is limited to what is enabled.[202] For non-enabled embodiments, the patentee would have to resort to the doctrine of equivalents.

A strict application of this possession principle may lead to a narrower claim scope, which may allow competitors to more easily design around the claim, reducing ex ante incentives to innovate.[203] Consequently, such

199. *See* Burk & Lemley, *supra* note 49, at 1593-94 ("Patent scope is necessarily interrelated with obviousness and enablement. . . . [P]atent claims are invalid if they are not fully described and enabled by the patent specification, so the permissible breadth of a patent will be determined by how much information the court determines must be disclosed to enable one of ordinary skill in the art to make and use the patented invention."). The scope of what she possesses is discerned objectively, so what the inventor thinks her invention is has little bearing on the issue.

200. *See, e.g.*, Jordan Paradise, Lori Andrews, & Tim Holbrook, *Patents on Human Genes: an Analysis of Scope and Claims*, 307 SCI. 1566, 1566-67 (Mar. 11, 2005) (discussing chilling effect for overly broad patents on human genes).

201. *Cf.* Burk & Lemley, *supra* note 49, at 1683 (advocating recalibration of enablement to permit broader claiming).

202. This approach can be seen in a recent concurring opinion. *See* Chiron Corp. v. Genentech, Inc., 363 F.3d 1247, 1263 (Fed. Cir. 2004) (Bryson, J., concurring) (adopting this approach and noting that it "preserves the benefits of patent protection for the invention that the applicant has actually conceived and enabled, without extending those benefits for an invention that the applicant may not have conceived and certainly has not enabled.").

203. Professor Feldman has advocated two scenarios relevant to claim scope—where the patentee has failed to disclose information that could have been known and information that could not have been known at the time of the application. *See* Feldman, *supra* note 197, at 45. The former would be evaluated through enablement to, in essence, show possession, while the latter would be unavailable seemingly even under the doctrine of

a shift could place more pressure on the doctrine of equivalents to provide adequate patent protection. Under the doctrine of equivalents, a device accused of infringing can infringe a patent even if the patent claim does not literally cover that device, so long as the differences between the invention as claimed and the accused device are insubstantial.[204] The court views the doctrine of equivalents to have its greatest role in the situation where later-developed technology has altered the importance of the patent claim.[205] In terms of possession, the court paradoxically allows a patentee to cover an asserted equivalent only when she was not in possession of that embodiment at the time she filed her patent application.[206]

The courts have criticized the doctrine of equivalents because it could undermine the certainty surrounding a patent claim.[207] The Federal Circuit has sought to contain the doctrine through a variety of legal limitations that have significantly reduced the effective claim scope.[208] Unlike the court, I am confident that the doctrine can play an effective and important role in guaranteeing adequate protection and compensation to ensure that the patent incentive is not undermined by unduly narrow patents.[209] The doctrine can play an important safety-valve function to ensure the proper function of the patent system by allowing protection for insubstantially different inventions, which in essence steal the innovated idea while avoiding the technical and admittedly imprecise language of the claim. As such, the ex ante to innovate is preserved by the potential for coverage under the doctrine of equivalents. Even if this potential is slight, resulting in significant discounting of added value to the patent, the

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equivalents. I do not subscribe to this absolute preclusion and believe the doctrine of equivalents can provide a safety valve to protect the patent incentive, particularly where changes without a given technology alter the landscape of that technology. *See infra* note 209.

204. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 39-40 (1997). The doctrine must be applied on an element-by-element basis. *Id.*; *see also* Timothy R. Holbrook, *Substantive v. Process-Based Formalism in Claim Construction*, 9 LEWIS & CLARK L. REV. 123, 129-30 (2005) [hereinafter Holbrook, *Claim Construction*].

205. *See, e.g.*, Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1310 (Fed. Cir. 1998) ("The doctrine of equivalents is necessary because one cannot predict the future. Due to technological advances, a variant of an invention may be developed after the patent is granted, and that variant may constitute so insubstantial a change from what is claimed in the patent that it should be held to be an infringement. Such a variant, based on after-developed technology, could not have been disclosed in the patent.").

206. *Id.* at 1311.

207. *Warner-Jenkinson*, 520 U.S. at 28-29 (expressing "concern . . . that the doctrine of equivalents . . . has taken on a life of its own, unbounded by the patent claims").

208. *See infra* notes 235-60 and accompanying text (explaining how the limitations on the doctrine are effectively evaluating whether the asserted equivalent was in the possession of one of ordinary skill in the art).

209. One way to maintain the doctrine of equivalents without unduly undermining certainty would be to limit the doctrine to situations where technological change *outside* the field of the relevant patent has altered the significance of the particular claim. For instance, in *Hughes Aircraft v. United States*, it was the advent of computer technology, and nothing within satellite control technology that impacted the relevant invention, making application of the doctrine of equivalents appropriate. *See* 140 F.3d 1470, 1475 (Fed. Cir. 1998).

availability of the doctrine still enhances the value of the patent and thus maintains innovation incentives. The added costs of uncertainty to me are outweighed by the systemic value of encouraging innovation, particularly in light of the fact that so few patents are litigated.

The Federal Circuit's precedent increasingly uses the specification to limit claim scope to accord to what the inventor objectively possessed. The court may have overstepped its bounds, however, in this regard. The court has come to treat disclosures in the specification in an estoppel-like way, holding any representation made by the patentee against her, regardless of whether the PHOSITA would interpret the patent in such a narrow fashion.[210] The court is placing primacy on the disclosure, and not on what the PHOSITA would think. The court is therefore concerned with reigning in the claim scope, based on the disclosure, to show what the inventor possesses and not what the patent teaches. The court's approach, however, is not truly objective; it is not properly viewed from the perspective of the PHOSITA but instead from an almost subjective viewpoint of what the *inventor* considered the invention to be.

The court has failed to draw the appropriate balance in its reliance on the specification.[211] By excluding consideration of the PHOSITA through the use of estoppel-like principles, the court has shifted the patent from being a technical document to a legal one, where representations made in the specification have significant legal consequences regardless of how a technologist would read them. While demonstrating the important role that possession—and thus enablement—plays in claim construction, the court has strayed too far down this road by adopting seemingly subjective, estoppel-like claim construction methodologies. A return to the use of the enablement doctrine would more properly balance the interest in keeping patent applications rather concise but preventing applicants from claiming far beyond what they have actually invented.

V. REFRAMING OTHER DOCTRINES IN LIGHT OF ENABLEMENT AS "POSSESSION"

The pervasiveness of enablement as demonstrating the possession of an invention is apparent in anticipation and claim scope. The law openly embraces enablement in these areas, although this role could be refined and enhanced in certain aspects. The importance of possession, however, is not limited to these circumstances. Consideration of other areas of patent law demonstrates the potential for an even greater role for possession, as demonstrated by an enabling disclosure. This section evaluates this potential expansion, which can afford the opportunity to reduce the

210. *See* Holbrook, *Claim Construction*, *supra* note 204, at 142-43 (discussing "specification estoppel").

211. *See id.* at 143-44, 150-51 (criticizing this approach and articulating a rebuttable presumption methodology for claim construction).

complexity of patent law and bring greater theoretical and doctrinal symmetry to the law.

A. Written Description Doctrine Should be Limited to its Priority Policing Function

Section 112 of the Patent Act requires the patent application to contain both a written description and an enabling disclosure of the invention.[212] The test for assessing the written description requirement is whether the inventor was in possession of the invention at the time she filed her application,[213] which would seem duplicative of the proposed use of enablement to demonstrate possession. Evaluation of the Federal Circuit's current written description jurisprudence, particularly that jurisprudence extending the requirement to originally filed claims, demonstrates that enablement, and not written description, is the correct manner to assess possession. The written description doctrine should be relegated to its previous role of preventing the addition of new matter to the patent application.

Although the origins of the written description requirement are fairly murky, it is likely a historical vestige of the early patent system that did not use claims.[214] Before claims, the only way to define the scope of the invention was to require a description of the invention, a task that claiming now fulfills.[215] With the advent of claiming, written description law evolved into a method to restrict the addition of new matter to a patent application, limiting the priority date available to an applicant.[216]

The Federal Circuit has expanded the written description beyond this traditional role in recent years,[217] resulting in numerous criticisms of this

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212. *See supra* notes 12-43 and accompanying text.

213. *See, e.g.*, Koito Mfg. Co., v. Turn-Key-Tech, LLC, 381 F.3d 1142, 1155 (Fed. Cir. 2004).

214. *See* Janis, *supra* note 6, at 63-64.

215. *Id.*

216. *See, e.g., In re* Curtis, 354 F.3d 1347, 1351-52 (Fed. Cir. 2004); Tronzo v. Biomet, Inc., 156 F.3d 1154, 1158 (Fed. Cir. 1998); *see also* Arti K. Rai, *Intellectual Property Rights in Biotechnology: Addressing New Technology*, 34 Wake Forest L. Rev. 827, 830-31 (1999). As Mark Janis has explained, the role of the written description requirement traditionally arose in three circumstances: "(1) where claims were amended or newly-added after the filing in a regular ex parte prosecution, raising an issue as to whether the claims were entitled to the application's filing date; (2) where the patentee asserted that claims in a later application were entitled to the benefit of the filing date of an earlier application under § 120; and (3) where a party asserted that counts in an interference were supported in a specification." Janis, *supra* note 6, at 59-60.

217. *See* LizardTech, Inc. v. Earth Resource Mapping, Inc., 433 F.3d 1336, 1344-45 (Fed. Cir. 2005); *In re* Wallach, 378 F.3d 1300, 1334-35 (Fed. Cir. 2004); Regents of the Univ. of Ca. v. Eli Lilly & Co., 119 F.3d 1559, 1566 (Fed. Cir. 1997); *see also* Univ. of Rochester v. G.D. Searle & Co., 375 F.3d 1303, 1307-08 (Fed. Cir. 2004) (Rader, J., dissenting from declination of en banc consideration) ("In 1997, this court for the first time applied the written description language of 35 U.S.C. § 112, ¶ 1 as a general disclosure requirement in place of enablement, rather than in its traditional role as a doctrine to prevent applicants from adding new inventions to an older disclosure . . . . Neither *Eli Lilly* nor this case has explained either the legal basis for this new validity requirement or the standard for 'adequate support.'").

change.[218] The Federal Circuit now examines whether the inventor possessed the invention under a separate and poorly articulated written description requirement, even for embodiments of the invention described in the originally filed claims. This shift in the law has created considerable disagreement even within the Federal Circuit, with some judges rejecting the distinction between enablement and written description.[219]

These judges and commentators have been right to criticize the Federal Circuit's expansion of the written description requirement. Aside from the uncertainty it has created in the law,[220] this shift belies the role of enablement to show possession elsewhere in patent law. If the written description were truly about assessing whether the inventor possessed the invention, one would believe that the written description would also have a role in assessing anticipation to determine whether the public actually possessed the invention pursuant to the prior art. The written description requirement plays no such role; only enablement is relevant to assessing the adequacy of the prior art's disclosure. The lack of a role of written description in any guise on the validity side of patent law strongly suggests that enablement is the true test of possession and that the Federal Circuit's expansion of the written description requirement is unfounded.

Further confirming the redundancy of these two standards is the PTO's attempts to implement the written description requirement. The PTO itself has conflated enablement and written description. Under the PTO's *Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, 1, "Written Description" Requirement*, the PTO adopted the "possession standard" articulated by the Federal Circuit.[221] The Guidelines offer that possession can be demonstrated by

> [a] description of an actual reduction to practice, or by showing that the invention was 'ready for patenting' such as by the disclosure of drawings or structural chemical formulas that show that the invention was complete, or by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention.[222]

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218. *See, e.g.*, Harris A. Pitlick, *The Mutation on the Description Requirement Gene*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 209, 222 (1998); Rai, *supra* note 216, at 834-35; Mueller, *Evolving Application*, *supra* note 14, at 617; Harold C. Wegner, *When a Written Description Is Not a "Written Description": When Enzo Says It's Not*, 12 FED. CIR. B.J. 271, 274 (2002).

219. *See Univ. of Rochester*, 375 F.3d at 1307-14 (Rader, J., dissenting from declination of rehearing en banc); *id.* at 1325-27 (Linn, J., dissenting from declination of rehearing en banc).

220. *See LizardTech, Inc.*, 453 F.3d at 1378 (Reader, J., dissenting); Duane M. Linstrom, *Spontaneous Mutation: A Sudden Change in the Evolution of the Written Description Requirement as it Applies to Genetic Patents*, 40 SAN DIEGO L. REV. 947, 970 (2003) ("[I]t has also left us with even more uncertainty in the law than before the ruling."); Jennifer L. Davis, Comment, *The Test of Primary Cloning: A New Approach to the Written Description Requirement in Biotechnological Patents*, 20 SANTA CLARA COMPUTER & HIGH TECH. L.J. 469, 487-88 (2004) ("[T]he court has not issued clear and consistent standards.").

221. *Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, 1, "Written Description" Requirement*, 66 FED. REG. 1099, 1104 (Jan. 5, 2001).

222. *Id.*

The first method—a showing of an actual reduction to practice—is simply a confirmation of possession by a physical embodiment. The second approach, however, is the Pfaff "ready for patenting standard" from the on-sale bar, which is the enablement standard.[223] The PTO has expressly said that proof of a written description can be met by providing an enabling disclosure. The federal agency with expertise in this area therefore has conflated the two standards, suggesting strongly that any distinction between written description and enablement is a false one.[224] As Mark Janis has noted, these Guidelines "do little to bring the written description requirement out from under the shadow of enablement."[225]

This article has shown that enablement is best viewed as establishing possession of an invention. Consequently, the present dichotomy of written description and enablement should be rejected. Relegating written description to its admittedly redundant role in policing new matter would eliminate the numerous doctrinal difficulties that attend the current differentiated approach.[226] The use of enablement to show possession is more consistent with the theoretical underpinnings of the patent system and would provide greater certainty and consistency.

B. Enablement as Possession in Infringement and Invalidity due to Offers to Sell

Because enablement is correctly concerned with showing possession of the invention, we can see an appropriate expansion of enablement in the area of patent infringement. Patents afford the inventor the right to exclude others from making, using, selling, offering to sell in the United States, or importing into the United States the claimed invention.[227] Historically, the courts have interpreted this provision to require the infringer to create a physical embodiment of the invention in order to infringe.[228] If a party can be "in possession" of the invention without physically constructing it, as proven by an enabling disclosure, then the time has come to reconsider the physicality requirement for infringement.

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223. *See supra* note 175 and accompanying text.

224. The third "describing by distinguishing characteristics" approach lacks any guidance whatsoever. Indeed, for support, the PTO relies upon *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1206 (Fed. Cir. 1991), which unhelpfully notes that one must define a compound by "whatever characteristics sufficiently distinguish it." The inquiry appears tautological. *See* Janis, *supra* note 6, at 71 ("Moreover, it simply restates the standard to say, for example, that possession is shown by drawings that disclose "sufficient detail" or written disclosure revealing "sufficiently detailed relevant identifying characteristics.").

225. Janis, *supra* note 6, at 71.

226. *See id.* at 80-88.

227. 35 U.S.C. § 271(a) (2003).

228. Deepsouth Packing Co. v. Laitram, 406 U.S. 518, 517 (1972), *supreceded by statute* 35 U.S.C. § 271(f) (2003). Section 271(f) provides infringement for the exporting of the unassembled components of an invention or for an element of an invention that has no substantial non-infringing use. 35 U.S.C. § 271(f)(1)-(2) (2003); *see also* Timothy R. Holbrook, *Territoriality Waning? Patent Infringement for Offering in the United States to Sell an Invention Abroad*, 37 U.C. Davis L. Rev. 701, 720-21 (2004).

Previously, I have articulated an appropriate dichotomy for patent infringement that embraces this view of enablement as demonstrating possession of a patented invention.[229] One view of infringement is that it is an attempt by the infringer to appropriate the patentee's invention. Appropriation can be thought of in two ways—the physical appropriation of the invention and the economic appropriation.[230] Physical appropriation can be seen as the right to exclude others from making, using, or importing the invention—perform these acts, necessarily the invention must be physically created. In contrast, the interest protected by the right to exclude others from selling or offering to sell the invention is the economic value of the invention.[231] In the economic context, physical possession of the invention is not a necessary prerequisite to the appropriation of the invention, as a sale can take place based on a writing.

The on-sale bar standard confirms that an invention can be economically appropriate prior to its physical construction. The bar only requires an enabling disclosure to show that the inventor has appropriated the commercial value of the invention, thus impermissibly extending the patent term. If the inventor can appropriate the value of the invention prior to its construction, it follows that an infringer can do the same as well. Enablement provides a limiting and evidentiary tool to show that the infringer was "in possession" of the invention in such a way as to economically appropriate its value.[232] Enablement, thus, is the appropriate standard to assess infringement for selling or offering to sell an invention.

C. Cabining the Doctrine of Equivalents—No Equivalents for What the Investor Possessed or Should Have Possessed at the Time She Files Her Application

The concept of possession is also prevalent in the limitations on the application of the doctrine of equivalents. This doctrine, by providing non-literal protection to the patentee, can create considerable uncertainty surrounding the scope of the patentee's right to exclude. To reduce this uncertainty, the courts have articulated a variety of legal limitations on the doctrine of equivalents. Review of these limitations reveals a consistent theme: the courts will not allow the patentee to claim as equivalent an embodiment of the invention that was or should have been in her possession at the time she filed her application. As such, the appropriate test should be that equivalency is precluded if the relevant evidence provided

229. Holbrook, *Threat of Sale*, *supra* note 172, at 801-15.

230. *See id.* at 805.

231. The economic harm from offering to sell an invention is primarily the price erosion impact that the mere threat of the sale may create in the market. *See id.* at 791. The harm from an actual sale could be price erosion and/or lost profit from the infringing sale. *Id.* at 790-98. Under either provision, patentees are guaranteed by statute, at minimal, a reasonable royalty. 35 U.S.C. § 284 (2005).

232. Concerns may be raised by fears of "paper infringement," but such infringement is neither problematic nor unprecedented. *See* Holbrook, *Threat of Sale*, *supra* note 172, at 815-20.

an enabling disclosure of the invention prior to the applicant's invention date. This "possession" view of these limitations on the doctrine of equivalents can be seen clearly in three particular limitations: the public dedication rule, the foreseeability rebuttal of prosecution history estoppel, and the prior art preclusion rule.

1. *The Johnson & Johnston Public Dedication Rule—Disclosures Enable the Relevant Embodiment to Bar Equivalency*

The role of possession in patent law, and thus enablement, can also be seen in a number of the limitations on the doctrine of equivalents. One such limitation is the public dedication rule, which precludes a patentee from asserting equivalency over an embodiment of the invention that is disclosed in the patent's specification but is not claimed.[233] The Federal Circuit has adopted a bright-line, formalistic rule that any embodiment disclosed but not claimed is dedicated to the public and thus is ineligible for protection under the doctrine of equivalents.[234] The court did not address, however, how sufficient the disclosure of the embodiment must be to trigger this limitation on equivalency.

The sufficiency of the disclosure subsequently arose in two cases. In *PSC Computer Products, Inc. v. Foxconn International, Inc.*,[235] the court confronted an invention directed toward clips used to secure a heat sink to a microchip.[236] The patent claimed only metal clips, and the accused device used plastic.[237] The patent's specification noted merely that the clip could be "made of a resilient metal such as stainless steel although other resilient materials may be suitable" and that "other prior art devices use molded plastic and/or metal parts."[238] The written description was otherwise silent as to the material of the clip.

To address whether this rather meager disclosure in the specification triggered the public dedication rule, the court reviewed the role that the specification, pursuant to § 112, ¶ 1, plays in providing notice to the public of the scope of the claims. The court concluded that

> if one of ordinary skill in the art can understand the unclaimed disclosed teaching upon reading the written description, the alternative matter disclosed has been dedicated to the public. . . . The disclosure must be of such specificity that one of ordinary skill in the art could identify the subject matter that had been disclosed and not claimed.[239]

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233. Johnson & Johnston Assocs. v. R.E. Serv. Co., 285 F.3d 1046, 1054 (Fed. Cir. 2002) (en banc).

234. *Id.* at 1054.

235. 355 F.3d 1353 (Fed. Cir. 2004).

236. *Id.* at 1354-55. A heat sink is used to dissipate heat to cool the semi-conductor and prevent it from becoming self-destructive. *Id.* at 1355.

237. *Id.*

238. *Id.* at 1356.

239. *Id.* at 1360.

Here, the court concluded that one of ordinary skill could identify the plastic alternative and, thus, that embodiment was dedicated to the public.[240]

The Federal Circuit appeared to posit that, in order to be dedicated to the public, the embodiment must satisfy the disclosure obligations of § 112, ¶ 1. Such reasoning is consistent with the justification for the public dedication rule espoused in *Johnson & Johnston Associates v. R.E. Service Co.* In that case, the court reasoned that the patentee could have claimed the disclosed embodiment but failed to do so.[241] In other words, if the inventor was in possession of a particular version of the invention, but failed to claim it, that variation falls into the public domain. Again, possession by the inventor is central to the dedication rule. In order to be able to claim an embodiment, the applicant must provide an enabling description of it; otherwise, the relevant patent claim would be invalid. Enablement again demonstrates whether the inventor possessed this particular variant of the invention.

For example, suppose an applicant patents an invention on a system designed to run on a wire-based network. She explains in the specification that the system has the potential to operate on a wireless system, but the technology for such a system has yet to be invented. Arguably, she has disclosed the invention but clearly would not be able to claim it because she did not—and indeed could not—provide an enabling disclosure. *PSC Computer Products* suggests that such disclosure would not preclude equivalency in that context because the inventor was not in possession of that embodiment.

The court, however, has retreated from using § 112 as its litmus test for the public dedication rule. While the court in *PSC Computer Products* implied that § 112 would be the test, the court expressly eschewed that approach in *Toro Co. v. White Consolidated Industries, Inc.*[242] In that case, the patentee argued directly that "the level of disclosure required to trigger a dedication must satisfy the standards of patentability under 35 U.S.C. § 112."[243] The court expressly rejected this argument, holding that "the disclosure-dedication rule does not impose a § 112 requirement on the disclosed but unclaimed subject matter."[244] Noting that § 112 is directed to the adequacy of disclosure for the *claimed* invention, the court concluded that "the level of disclosure needed to implicate the disclosure-dedication rule is different from the level of disclosure required under § 112 to support claims defining the scope of the coverage of an invention."[245] The court thus held that the phrase, "without having the operator manually insert or remove a replaceable ring" dedicated the use of a

240. *Id.*
241. Johnson & Johnston Assocs. v. R.E. Serv. Co, 285 F.3d 1046, 1054 (Fed. Cir. 2002) (en banc).
242. 383 F.3d 1326, 1334 (Fed. Cir. 2004).
243. *Id.* at 1333.
244. *Id.* at 1334.
245. *Id.*

replaceable ring to the public, notwithstanding that the disclosure would not have enabled the use of a replaceable ring in the claimed invention.[246]

The *Toro* panel purported to rely upon the standard articulated in *PSC Computer Products* to assess the adequacy of the disclosure. The *Toro* opinion failed to acknowledge that the panel in *PSC Computer Products* derived its standard from the § 112 disclosure obligations. While appearing to apply *PSC Computer Products*, the *Toro* opinion disingenuously eviscerated it. There appears to be an intracircuit conflict as to what constitutes adequate disclosure for the public dedication rule. Indeed, the *Toro* panel failed to articulate any metric to be used in applying the public dedication rule. If the adequacy of the disclosure is not measured by § 112, then what is the appropriate standard? The *PSC Computer Products* test appropriately tied the adequacy to § 112 because the dedication rule is in essence about possession; the inventor can only dedicate to the public that which she possessed, as demonstrated by an enabling disclosure of that embodiment of the invention.

2. *Foreseeability Rebuttal of the Festo Presumption*

The public dedication rule is not the only limitation on the doctrine of equivalents impacted by focusing on the role of possession in patent law. Prosecution history estoppel, when examined through the lens of possession, is more appropriately viewed as dealing with assessing whether the patentee possessed the relevant equivalent during the prosecution of the patent.

Prosecution history estoppel limits the ability of the patentee to assert equivalents that she implicitly or expressly disclaimed while prosecuting the patent at the PTO. Such surrender of the claim scope can occur when the applicant amends a claim that, before the amendment, literally covered the asserted equivalent but, after the amendment, does not.[247] Surrender can also occur if the applicant makes arguments that evince a clear surrender of that subject matter.[248]

The Supreme Court has created a rebuttable presumption of prosecution history estoppel; if an applicant makes a narrowing amendment for reasons related to the patentability of the invention, the applicant presumptively has surrendered all equivalents as to that amended limitation.[249] Because the presumption is rebuttable, a patentee can still assert equivalency if the amendment bore only a tangential relationship to the

246. *Id.*

247. *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 733-34 (2002) ("When, however, the patentee originally claimed the subject matter alleged to infringe but then narrowed the claim in response to a rejection, he may not argue that the surrendered territory comprised unforeseen subject matter that should be deemed equivalent to the literal claims of the issued patent.").

248. Eagle Comtronics, Inc. v. Arrow Communication Labs., Inc., 305 F.3d 1303, 1316 (Fed. Cir. 2002).

249. *Festo Corp.*, 535 U.S. at 740.

asserted equivalent, if the asserted equivalent was not foreseeable to one of ordinary skill in the art at the time the applicant made the amendment, or if it would be inappropriate to limit the patentee to the literal scope of her claim.[250] The "foreseeability" rebuttal, when properly considered, is essentially an issue of possession.

The foreseeability inquiry asks whether the PHOSITA would have recognized that the asserted equivalent was available at the time of the amendment. In other words, the test is assessing whether the patentee should have been able to draft a claim that literally covered the asserted equivalent device.[251] In order to claim the equivalent literally, it must have necessarily been within the grasp of the PHOSITA. In other words, if the PHOSITA possessed the invention at the time the amendment was made, then the patentee is foreclosed from asserting equivalency. Foreseeability is thus possession, which can be demonstrated through enabling disclosures in the prior art contemporaneous to the amendment. If the prior art, in combination with what the inventor has disclosed in her application, would enable the asserted equivalent, then the patentee is precluded from using the doctrine of equivalents to recapture that surrendered subject matter. Lack of an enabling disclosure rebuts the presumption, permitting an assertion of equivalency. Thus, just as was the case with the public dedication rule, the foreseeability standard is truly about assessing whether the inventor was in possession of the asserted equivalent but failed to claim it.

3. *Prior Art Preclusion of Equivalency Simply Asks if the Public Already Possesses the Invention*

Another important limitation on a patentee's ability to assert equivalency is the prior art. A patentee cannot use the doctrine of equivalents to ensnare an embodiment that is already in the prior art.[252] The justification for this doctrine is that the "patentee should not be able to obtain, under the doctrine of equivalents, coverage which he could not lawfully have obtained from the PTO by literal claims."[253] Just as the prior art limits the literal scope of claims, it limits the range of available equivalents.

The Federal Circuit has offered an optional methodology to assess whether an asserted equivalent is in the prior art. A court is to create a hypothetical claim, based on the claims at issue, that is rewritten to liter-

250. *Id.* at 740-41.

251. *Id.* at 741 ("The patentee must show that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent."). This reasoning is identical to that of the public dedication rule of *Johnson and Johnston*, which is a test of possession. *See supra* notes 235-47 and accompanying text.

252. Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 683 (Fed. Cir. 1990).

253. *Id.* at 684.

ally cover the asserted equivalent.[254] If that hypothetical claim is anticipated or rendered obvious by the prior art, then necessarily the equivalent is in the public domain; and the patentee is precluded from asserting equivalency.[255]

Prior art preclusion can also be viewed as simply determining whether the public was already in possession of the invention. The patentee cannot capture that which is already in *possession* of the public, as is the case in assessing the novelty and obviousness of an invention. This possession by the public would be demonstrated through an enabling disclosure. The hypothetical claim methodology itself involves an assessment of anticipation, which always requires an assessment of whether the prior art is enabling.[256] The obviousness analysis also implicates enablement in terms of demonstrating possession of the invention.[257] The court has not expressly recognized this role for enablement in the prior art preclusion doctrine, but it seems to be, in fact, the cornerstone of the inquiry. The ultimate question is whether the public was in possession of the invention of the asserted equivalent, which should be assessed by whether the prior art would have enabled that equivalent.[258] The patentee cannot assert equivalency over that which the public already possessed. This assessment of possession would differ from the public dedication rule and the foreseeability rebuttal of prosecution history estoppel in that the relevant references for determining enablement would *only* be the prior art; the inventor's disclosures in the patent itself would not be used because they are not part of the prior art.

D. Obviousness and the Motivation to Combine—Is it Really Just Enablement?

Along with enablement, judges have viewed obviousness as perhaps the most important patentability doctrine.[259] Governed by 35 U.S.C. § 103, the obviousness doctrine prevents an applicant from obtaining a patent on a trivial advance in the art, even though the invention may not have been identically disclosed in the prior art.[260] Whereas each and every claim limitation must be present in a *single* prior art reference to anticipate an invention, obviousness is more flexible in that a combina-

254. *Id.* at 684-85. The Federal Circuit has arbitrarily mandated that a court may only expand the scope of the claim when crafting a hypothetical claim; it cannot add limitations that would contract the claim scope. Streamfeeder, LLC v. Sure-Feed Sys., Inc., 175 F.3d 974, 983-84 (Fed. Cir. 1999). This proscription is inappropriate. If a patentee can add a narrowing limitation to the hypothetical claim so that the hypothetical claim still literally covers the accused device while also avoiding the prior art, the accused device is necessarily *not* in the prior art. Equivalency therefore should not be precluded.

255. *Wilson Sporting Goods*, 905 F.2d at 684-85.

256. *See supra* notes 152-170 and accompanying text.

257. *See infra* notes 262-80 and accompanying text.

258. *See* Burk & Lemley, *supra* note 49, at 1594.

259. *See, e.g.*, Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956, 982 (Fed. Cir. 2002) (Rader, J., dissenting from declination of rehearing en banc) ("Enablement, arguably the most important patent doctrine after obviousness, has many important applications.").

260. Mueller, *supra* note 25, at 131.

tion of prior art references can be used to yield the claimed invention. In other words, if the advance by the inventor would have been "obvious" to one of ordinary skill in the art given the entire state of the prior art, a patent is not available. Obviousness thus encourages the development of larger "jumps" in innovation instead of affording protection for the incremental development of technology that would occur even without a patent system.

At least, theoretically, that is the role that obviousness is to play in the patent system. The Federal Circuit, according to some commentators, has significantly lessened the ability of the obviousness requirement to keep trivial advances from being patented. The modern standard for obviousness was established by the Supreme Court in *Graham v. John Deere*, where the court articulated the proper method to assess obviousness.[261] A court must first evaluate the scope and content of the prior art, second identify the differences between the prior art and the claimed invention, and third consider the level of ordinary skill in the art.[262] Finally, the court may look at secondary, non-technical factors that might inform the analysis, such as the commercial success of the invention, the failure of others to create the invention, and the existence of a long-felt but unsolved need which the invention satiates.[263]

The Federal Circuit has elevated another factor as effectively determinative of the obviousness question—the existence of a motivation in the prior art to combine the various references.[264] Because obviousness, unlike anticipation, allows the combination of prior art references, the court has generally scoured the prior art for some reason to make the combination (a "motivation to combine" the references).[265] On the other hand, if the prior art gives reasons to believe that making the combination would be ineffective, then the court has concluded that such "teaching away" from the claimed invention suggests that the invention is non-obvious. Although arguably a mere subset of the "content of the prior art" prong of *Graham*, the Federal Circuit has used this element essentially as an independent fifth factor, raising its importance far above the other obviousness factors. The Court has actually found an invention to be non-obvious, notwithstanding the presence of each and every claim limitation in various pieces of prior art, simply because the prior art lacked a motivation to combine those references.[266]

The Federal Circuit has been quite formalistic in its application of the motivation to combine criterion, which has generated criticism that the

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

262. *Id.* at 17.

263. *Id.* at 17-18.

264. *See, e.g.*, Catalina Lighting, Inc. v. Lamps Plus, Inc., 295 F.3d 1277, 1288 (Fed. Cir. 2002); *see also* Timothy R. Holbrook, *The Supreme Court's Complicity in Federal Circuit Formalism*, 20 SANTA CLARA COMPUTER & HIGH TECH. L.J. 1, 3 (2003); John R. Thomas, *Formalism at the Federal Circuit*, 52 AM. U. L. REV. 771, 773 (2003).

265. *Catalina Lighting, Inc.*, 295 F.3d at 1288.

266. Carella v. Starlight Archery & Pro Line Co., 804 F.2d 135, 140 (Fed. Cir. 1986).

court has significantly emasculated the obviousness standard. Technically, the motivation to combine could come not only from an express writing in the prior art but also from the unexpressed knowledge of the PHOSITA.[267] The court, however, has looked for *express* teachings in the prior art and has been loathe to rely simply on such unwritten knowledge.[268] While requiring an express articulation of a motivation to combine in the prior art provides evidentiary benefits, such an obligation ignores the reality that the PHOSITA might think to combine the references even without explicitly seeing the motivation somewhere in the prior art. Consequently, many inventions obvious to the PHOSITA are patented due to the lack of a written motivation to combine.

Under current law, enablement of a prior art reference plays no role in the obviousness determination.[269] As enablement is only applied, in both the validity and prior art contexts, to a *single* prior art reference, this is undoubtedly correct. Because the single reference does not disclose the entirety of the invention, the disclosure necessarily cannot be enabling because part of the invention is missing.[270] But deconstructing what the Federal Circuit is doing with the "motivation to combine" doctrine reveals that, in essence, the court is incorporating an enablement standard into obviousness. The court is asking whether the invention was already in the possession of the public.

By requiring the motivation to combine, the court is in essence asking, "if we combine these references together and treat them as a *single prior art* reference, will the invention be disclosed sufficiently in the prior art?" In other words, will the public domain be *in possession* of the invention because the prior art will have enabled the invention through the combination of these references? In order to make that assessment, however, the prior art must *tell* the public which references to combine. Otherwise, the fractional pieces of the invention disclosed in the prior art are too remote to be considered enabled. If the prior art teaches us to combine the references, the court can legitimately consider those combined references as a single reference and assess whether the prior art enables the claimed invention.

Such reasoning, while beyond the court's express articulation of the test, has analogous support in the anticipation context. Technically, an invention is anticipated only if the prior art discloses the invention identically in a single prior art reference. One exception to this rule, however, is when a piece of prior art incorporates another by reference.[271] In such

267. *See, e.g.*, *In re* Fulton, 391 F.3d 1195, 1200 (Fed. Cir. 2004).

268. *See In re* Sang Su Lee, 277 F.3d 1338 (Fed. Cir. 2002) (rejecting use of "common knowledge and common sense" to find a motivation to combine); *see* Rebecca S. Eisenberg, *Obvious To Whom? Evaluating Inventions From The Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 895 (2004).

269. *See, e.g.*, Paperless Accounting, Inc. v. Bay Area Rapid Transit Sys., 804 F.2d 659, 665 (Fed. Cir. 1986).

270. *See* Holbrook, *More Things Change*, *supra* note 9, at 964-65 n.174.

271. *See, e.g.*, Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1282 (Fed. Cir. 2000).

circumstances, the single prior art reference is considered to encompass not only its own express teachings but all of the teachings of the incorporated reference.[272] Thus, technically speaking, anticipation can be assessed by multiple references,[273] but the court views this as acceptable because the incorporation by reference would show how the PHOSITA would read that single reference; she would read it to encompass all of the teachings of the other reference.[274]

That is precisely what the Federal Circuit is doing in the obviousness context with the "motivation to combine" principle. The court is, in essence, adopting "incorporation by reference" in the obviousness context and then evaluating, once incorporated, whether the prior art would provide an enabling disclosure of the invention.[275] In other words, does the prior art possess the entirety of the invention once all the relevant references are properly combined? Under the Federal Circuit's approach, obviousness now essentially states that if the prior art, when coupled with a motivation to combine to bring all of the references together, would enable the creation of the invention, the invention is obvious and ineligible for patent protection.[276]

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272. *Id.*

("Incorporation by reference provides a method for integrating material from various documents into a host document—a patent or printed publication in an anticipation determination—by citing such material in a manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein.").

273. Another exception to the "one reference" rule for anticipation is inherent disclosure. A reference can be anticipatory even if part of the invention is not *expressly* disclosed but is inherently disclosed. Other prior art references can be used to show that the absent feature necessarily is present in the original piece of prior art. *See* Cont'l Can Co. USA v. Monsanto Co., 948 F.2d 1264, 1268 (Fed. Cir. 1991) ("To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence.").

274. *Advanced Display Sys., Inc.*, 212 F.3d at 1283 ("Further, the standard of one reasonably skilled in the art should be used to determine whether the host document describes the material to be incorporated by reference with sufficient particularity.").

275. Of course, there are some odd inconsistencies with the Federal Circuit's opinions in this regard. The ultimate question of anticipation is a fact question, yet the issue of whether a piece of prior art incorporates another piece by reference is a question of law. *See id.* ("Whether and to what extent material has been incorporated by reference into a host document is a question of law."). In perplexing contrast, the ultimate question of obviousness is legal, whereas the question of whether there is a motivation to combine prior art references is one of fact. *See* Med. Instrumentation & Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1220 (Fed. Cir. 2003). This disparity is bizarre because in both circumstances, the court is in essence doing the same thing—reading the documents from the perspective of the PHOSITA. Whether this is properly a legal or factual exercise is open to debate, but clearly it should be one or the other and not the inexplicable and inconsistent standard that presently exists.

276. While this explanation has considerable descriptive power, I admit that I disagree with the Federal Circuit's current obviousness jurisprudence because the court has set the standard for obviousness far too low. A heightened standard of obviousness could still be consistent with an enablement inquiry if the proper role for the PHOSITA is established. The PHOSITA likely has some ability to see what is in the possession of the inventor even if not expressly stated. The PHOSITA could be the linchpin, then, in reconciling a heightened obviousness standard with a continuing view of enablement as evinces obviousness. The Federal Circuit, however, has removed the PHOSITA from the obviousness analysis

An interesting, although outlying, line of Federal Circuit cases confirms that enablement and obviousness are both essentially about possession. The Federal Circuit's predecessor, the Court of Customs and Patent Appeals, noted that "[r]eferences relied upon to support a rejection under 35 USC [§]103 must provide an enabling disclosure, i.e., they must place the claimed invention in the possession of the public."[277] The court itself therefore conflated the enablement and obviousness analysis in that both are essentially seeking to demonstrate possession.

This statement could be viewed as inconsistent with current law if the enabling disclosure is specific to the individual references. A subsequent Federal Circuit case has clarified, though, that non-enabled prior art references are still relevant for the obviousness analysis, and thus the reference to enablement by the CCPA must mean that the prior art *as a whole* must enable the invention.[278] Considering enablement as part of the obviousness inquiry has shown little traction in the Federal Circuit, however. Admittedly, these cases all involve claims to chemical compounds; in other contexts the need for the prior art to enable the invention may not be a significant issue. Conspicuously, though, the rhetoric of obviousness demonstrating "possession" has fallen out of the Federal Circuit's jurisprudence.[279]

The approach articulated here would reconcile this line of cases with the rest of the Federal Circuit obviousness jurisprudence. Possession is conceptually the keystone to the obviousness inquiry, and enablement is the best way to evaluate whether the public already possessed the invention. The *Graham* factors can properly be viewed simply as inquiries relevant to the broader enablement inquiry. Indeed, if the differences between the prior art and the claimed invention are slight, more likely than not the invention would be enabled. Other factors relevant to enablement could also be used to flesh out whether the public possessed the invention or, in other words, if it was obvious.

E. Recognizing Enablement's Pervasiveness Simplifies and Enhances Patent Law

The idea of demonstrating the possession of an invention pervades patent law. Shifting the focus in these circumstances to possession, as shown through an enablement inquiry, provides numerous benefits. To begin,

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altogether by focusing on express disclosures in the prior art to the near exclusion of all consideration of what the PHOSITA would know.

277. *In re* Payne, 606 F.2d 303, 314 (C.C.P.A. 1977).

278. *See* Beckman Instruments, Inc. v. LKB Produkter AB, 892 F.2d 1547, 1551 (Fed. Cir. 1989) ("Even if a reference discloses an inoperative device, it is prior art for all that it teaches. . . . In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method."); *see also In re* Kumar, 418 F.3d 1361, 1368 (Fed. Cir. 2005) ("Although published subject matter is 'prior art' for all that it discloses, in order to render an invention unpatentable for obviousness, the prior art must enable a person of ordinary skill to make and use the invention.").

279. *Beckman Instruments, Inc.*, 892 F.2d 1547 (avoiding use of the "possession" language).

use of enablement affords an already developed area of law as a basis for exploring these other issues, which should facilitate greater maturation of these doctrines, particularly in areas that are relatively nascent, such as foreseeability rebuttal of prosecution history estoppel and the public dedication rule. Moreover, imposing an enablement inquiry in these areas adds simplicity to patent law; instead of being mired in various formulations for what constitutes possession in one context versus another, lawyers and the courts will rely on a single doctrine. Because these issues all involve the issue of possession, it makes sense to treat them all in the same fashion.

Finally, the central role of the PHOSITA in these assessments can bring the proper perspective of a technologist, as opposed to a lawyer or judge, to these issues.[280] As Professors Burk and Lemley have offered, the PHOSITA is a potent lever to effectuate innovation policy.[281] Reliance on the PHOSITA affords some discretion to the courts, and even the PTO, to allow the development of the law to be informed by technology-specific considerations. This flexibility allows tailoring of the law to account for variations among the markets developing for a given technology.[282]

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280. *Cf.* Eisenberg, *supra* note 268, at 889-90 (noting Federal Circuit's marginalization of PHOSITA).

281. Burk & Lemley, *supra* note 49, at 1648-51; *see also* Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1202-05 (2002) [hereinafter Burk & Lemley, *Technology-Specific?*].

282. *See supra* note 281. It is not clear if the "policy lever" approach advocated by Burk and Lemley is truly a way to tailor patent law to assist in innovation efforts or, instead, is merely patent law *responding* to developments that have already occurred. The examples the authors provide—semi-conductor chips, biotechnology, and software—have all evolved certain characteristics, but these characteristics evolved *before* application of the patent law. The policy levers thus seem to be reacting to norms developed in the technology area, instead of being the driver of the innovation norms.

Relying on the courts to implement these levers essentially guarantees that they can only be reactive and not proactive. The courts cannot anticipate the advent of a new technology any better than Congress, so these levers necessarily will be retrospective. Moreover, if a case is before the courts via infringement litigation, then necessarily time has passed that has made the litigation worthwhile, suggesting that some product is already on the market and that the technology has already achieved some level of maturation. The courts can only react subsequent to this evolution. Appeals directly from the PTO cannot adequately anticipate technology needs because those cases will only reach the courts where there has been a *denial* of protection. If a standard by the PTO is allowing either an overly restrictive view of obviousness or an overly narrowing view of enablement, then that issue may reach the courts relatively contemporaneously with the invention. An example of this approach is the *In re Fisher* case, in which the Federal Circuit affirmed the PTO's approach to defining utility. *See* 421 F.3d 1365 (Fed. Cir. 2005). But for circumstances where arguably the legal standard is inappropriately broad and permissive, allowing patents to be granted that should not have been granted, the Federal Circuit will not reach the issue until litigation arises because there will be no basis for the appeal. Although the court ultimately agreed with the PTO's change in policy, *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), epitomizes this scenario. There, the case arose through litigation, which necessarily meant the PTO had begun to issue business method patents.

The reactionary nature of these levers is not necessarily bad. Such reflective tailoring involved may foster more rapid maturation of these fields. Patent law will not be the driver, as is often suggested. Instead, it will respond to a given technology as it evolves.

Importantly, the enablement inquiry in each of these various areas will vary in terms of the timing of the inquiry and the relevant evidence to be used. For example, the analysis of obviousness-as-enablement and prior art preclusion rules will be made by taking into account only the prior art at the time of the invention.[283] In contrast, the enablement inquiry for the public dedication rule would consider primarily the patent disclosure itself. Also, the evidence considered in the foreseeability analysis would differ because it would include the prior art and the disclosure of the patent itself. The symmetrical beauty and theoretical accuracy of using enablement to demonstrate possession does not mandate that all analyses would be exactly the same, and enablement has the flexibility to accommodate these variables.[284] Enablement, once its view of having a "teaching" function is relegated to the proverbial dustbin, provides an excellent lens through which to analyze this core issue of possession.

VI. CONCLUSION

Patent theory has failed to adequately explain why all of the world's patent systems insist on an enabling disclosure of the invention. The quid pro quo view of the patent system is in fact at odds with the other theoretical justifications for a patent system. By shifting away from the view that patents are designed to teach something, particularly in light of the systemic impediments to this objective, the proper role of disclosure is recognized as demonstrating possession of the invention. The best mechanism for measuring the fairly nebulous idea of "possession" is the enablement doctrine. From this perspective, we can see how pervasive the concept of possession, and accordingly enablement, is—and should be—in patent law. This recognition would streamline the various strands of patent law, greatly simplifying what is generally regarded as a hopelessly complex area of the law.

This posture is far different from the classic view of patent law. Moreover, the courts must be willing to depart from certain directions in order to reflect such evolution, which could prove difficult for common law courts to do.

283. 35 U.S.C. § 103(a) (2005).

284. *But see* Burk & Lemley, *Technology-Specific?*, *supra* note 281, at 1202 (arguing for a decoupling of the enablement and obviousness PHOSITAs). It is not clear that such decoupling would be any different than simply recognizing the highly contextual nature of the enablement inquiry. Burk and Lemley, in fact, offer no meaningful doctrinal or practical basis to perform such decoupling, other than noting that the obviousness PHOSITA is an innovator while the enablement innovator is not. They fail to offer any substantive manner of implementing such a difference on the already highly abstract PHOSITA.

In contrast, the knowledge differential between the two that Burk and Lemley reject provides a precise, factually based method to distinguish the two situations. As enablement and obviousness are both directed to showing possession of the invention, although in different settings, the differential is also theoretically consistent and does not depend on affording the already highly abstract PHOSITA personality traits. Indeed, a key evidentiary difference will be the relevance of the patent disclosure itself; it is essential in assessing whether the inventor was in possession of the invention, satisfying her disclosure obligations, and it is utterly irrelevant in assessing whether the public possessed of the invention under the obviousness standard. By maintaining a single, consistent but flexible framework to demonstrate possession in these contexts, the flexibility espoused by Burk and Lemley could be achieved.

Admittedly, enablement doctrine itself is far from pristine. It is more of a standard than a rule. A refinement of the current state of enablement doctrine is beyond the scope of this article, but fuzziness in this area may not be bad.[285] As enablement is intimately connected to the PHOSITA, it is a potentially powerful patent policy lever, as the above review of its actual and potential pervasiveness in patent law demonstrates. Enabling enablement doctrine its full ripeness will create simplicity in the law and hopefully allow the PHOSITA to return to her appropriate role as the arbiter of patent law.

285. *Id.* at 1639 (advocating standards-based patent system).