

6-1-2016

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Clark D. Asay

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Clark D. Asay, *The Informational Value of Patents*, 31 BERKELEY TECH. L.J. 259 (2016).
Available at: <http://scholarship.law.berkeley.edu/btlj/vol31/iss1/7>

Link to publisher version (DOI)

<http://dx.doi.org/https://doi.org/10.15779/Z38J85N>

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THE INFORMATIONAL VALUE OF PATENTS

Clark D. Asay[†]

ABSTRACT

Traditional patent law theories teach that a patent's rights of exclusion are a patent's key benefit to the patentee and are necessary to make the patent system work. Yet patentees are increasingly giving away such rights, in whole or in part, as part of a growing phenomenon: patent pledges. In these scenarios, patentees voluntarily commit to limit enforcement of their patent rights. This phenomenon seems to contradict traditional patent law theories. After all, if exclusive rights are necessary, why are patentees increasingly sacrificing some or all of those rights?

This Article argues that patentees do so because in patent pledging contexts, patents often entail a different value proposition than what traditional patent law theories posit. That is, patent pledgers use patents as tools to signal information about themselves and their innovation preferences to product, labor, and capital markets. This information may then facilitate a variety of economic purposes behind such pledges. This Article uses concepts from signaling theory in other disciplines to identify several patent law features that help make patents valuable as informational tools. It also reviews several recent Supreme Court cases and their possible implications for the informational value of patents identified in this Article. The Article concludes by arguing that these underappreciated informational roles of patents deserve greater consideration in formulating and tailoring patent law and policy, particularly in industries, such as information technology, where patent pledging is more common.

DOI: <http://dx.doi.org/10.15779/Z38J85N>

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[†] Associate Professor of Law, BYU Law School. JD, Stanford Law School. M.Phil, University of Cambridge. Many thanks to Stephanie Bair, Jorge Contreras, Brigham Daniels, Christopher Funk, Matthew Jennejohn, Michael Mattioli, David Moore, Amelia Rinehart, Sharon Sandeen, Andres Sawicki, Brett Scharffs, Katherine Strandburg, Lisa Grow-Sun, Liza Vertinsky, participants at a BYU Law faculty paper workshop, participants at the 2015 Patent Pledges Symposium held at American University College of Law, participants at a CLE presentation for the IP section of the Utah State Bar, and participants at the 2015 IP Scholars Conference for helpful comments on earlier versions of this Article.

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I. INTRODUCTION

Tesla made headlines in 2014 when its iconic CEO, Elon Musk, publicly pledged not to enforce the company's patents relating to electronic cars against those practicing the company's patented technologies.¹ Shortly thereafter, Toyota, one of Tesla's main competitors, followed suit with its own patent pledge relating to hydrogen fuel cell car technology.² And while these announcements garnered significant attention at the time, they are only the tip of the iceberg.³ Parties are increasingly engaging in "patent pledging," a phenomenon where parties voluntarily commit to limit enforcement of their patent rights.⁴ Hundreds of parties have made such pledges implicating thousands of patents, including the likes of Google, IBM, Fujitsu, Ford, Apple, Bank of America, Cisco Systems, Comcast, Facebook, Intel, LinkedIn, Twitter, Microsoft, Monsanto, Samsung, and many others.⁵ Furthermore, "FRAND" commitments—where parties voluntarily commit to license certain of their patents on "fair, reasonable and non-discriminatory" terms—have been prevalent in standard-setting contexts for some time, and have continued to grow in importance.⁶

The economic motivations behind patent pledges have been discussed extensively, particularly in the FRAND context.⁷ Often the economic

1. Elon Musk, *All Our Patent Are Belong to You*, TESLA BLOG (June 12, 2014), <http://www.teslamotors.com/blog/all-our-patent-are-belong-to-you> [<http://perma.cc/4KS4-SUXQ>].

2. Charlie Osborne, *Toyota Pushes Hydrogen Fuel Cell Cars with Open Patent Portfolio*, ZDNET (Jan. 6, 2015), <http://www.zdnet.com/article/toyota-pushes-hydrogen-fuel-cell-cars-with-open-patent-portfolio> [<http://perma.cc/XHB9-6N3K>] (discussing Toyota's move).

3. See Program on Info. Justice & Intellectual Prop.—Am. Univ. Wash. Coll. of Law, *Non-SDO Patent Statements and Commitments*, PROGRAM ON INFO. JUSTICE & INTELLECTUAL PROP., <http://www.pijip.org/non-sdo-patent-commitments> [<http://perma.cc/4XVZ-6MF9>] [hereinafter Program on Info. Justice] (cataloguing the known existing non-standards development organization (SDO) patent pledges).

4. See generally Jorge L. Contreras, *Patent Pledges*, 47 ARIZ. ST. L.J. 543 (2016) (discussing this phenomenon).

5. Program on Info. Justice, *supra* note 3; see also Contreras, *supra* note 4.

6. The literature on FRAND commitments is voluminous. For a review of some of this literature, see Jorge L. Contreras, *A Market Reliance Theory for FRAND Commitments and Other Patent Pledges*, 2015 UTAH L. REV. 479 (2015).

7. See, e.g., U.S. DEP'T OF JUSTICE & U.S. PATENT & TRADEMARK OFFICE, POLICY STATEMENT ON REMEDIES FOR STANDARDS-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY F/RAND COMMITMENTS 5 (2013), <http://www.justice.gov/atr/public/guidelines/290994.pdf> [<http://perma.cc/AT4T-5VQJ>] (discussing the primary purposes behind FRAND commitments); Anne Layne-Farrar, A. Jorge Padilla & Richard Schmalensee, *Pricing Patents for Licensing in Standard-Setting Organizations: Making*

rationale behind FRAND commitments is to enable adoption of common technical standards, which grows the economic pie for everyone involved, while also providing patent owners with some economic remuneration for their patent rights.⁸ Outside of the FRAND context, scholars have also begun to identify a variety of economic purposes that may lead parties to give up or otherwise limit their valuable patent rights.⁹ Many of these economic purposes are similar to the purposes underlying FRAND commitments.¹⁰ For instance, one of Tesla's basic purposes in pledging its patents was to encourage others to collaborate with the company in making electronic car technologies a more widely available alternative to the established auto industry.¹¹

Yet while the economic motivations behind patent pledges may be clear in many cases, less clear is the role of patents in promoting such efforts. Do patents help facilitate such purposes, or are they simply an impediment to them? Much of the patent literature, with its extensive focus on patent "hold-up" problems, suggests the former.¹² In other words, patent pledges help address the threat of patent owners using their patents to "hold up" innovation.¹³ Thereafter, innovation can move forward with fewer impediments, and the economic pie can grow for everyone

Sense of FRAND Commitments, 74 ANTITRUST L.J. 671 (2007) (discussing the purposes behind FRAND commitments in general and issues in resolving what FRAND commitments actually mean); Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135 (2013) (discussing how adopting common technical standards helps facilitate competition and innovation, and indicating that requiring FRAND terms are a primary means of enabling such benefits).

8. See Lemley & Shapiro, *supra* note 7, at 1137.

9. See Contreras, *supra* note 4, at 30–49 (discussing possible economic motivations behind non-SDO patent pledges).

10. *Id.*

11. David Houlihan, *How Tesla Played 'Fox' With Its Patent Pledge*, BLUE HILL RESEARCH (June 23, 2014), <http://bluehillresearch.com/tesla-played-fox-with-its-patent-pledge> [<http://perma.cc/6WQX-GEB6>] (citing to several sources that point to this economic purpose behind Tesla's pledge).

12. See, e.g., Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151 (2009) (pointing to a variety of sources that identify patent holdup as a serious problem and rebuffing scholarship questioning the problems of patent holdup); Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007) (discussing the problems of patent hold-up generally); Mark A. Lemley, *Ten Things to Do About Patent Holdup of Standards (And One Not To)*, 48 B.C. L. REV. 149 (2007) (discussing ways to address the hold-up problem).

13. Lemley, *supra* note 12, at 156–59 (discussing this solution in the standard-setting context).

involved.¹⁴ But patents, rather than assisting with such efforts, are often viewed in the literature as impediments to be removed.¹⁵ In other words, they may play little if any positive role, at least at this later, post-invention stage of the innovation cycle.¹⁶ The same conclusions largely hold true in the “knowledge sharing” and “knowledge commons” literature, where patent rights, compared to other factors, are largely viewed as either problematic, or at least less relevant, in fostering innovation.¹⁷

In contrast, this Article argues that the growing patent pledging phenomenon makes manifest that patents have previously underappreciated informational value to patent holders and the relevant public alike. In other words, rather than simply being possible impediments to innovation post-invention, patents may serve a variety of different informational functions that help promote the types of economic

14. See Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424 (1985) (discussing the possible benefits of network effects, in which the value of a good or service increases the more other people use the same good or service. And in order for network effects to occur, patent licenses or pledges must often be secured).

15. They may, of course, play a role in incentivizing parties to develop the invention in the first place. See Lemley, *supra* note 12, at 156–59 (suggesting that parties in a standards organization should not be required to license their patents royalty-free, because doing so may discourage such parties from engaging in the inventive behavior in the first place). But once the patents are in place, they become, at least in much of the patent holdup literature, an obstacle to competition and collaborative innovation.

16. See *id.* But not all theories treat these later transactions as simply impediments, and may in fact view the economic opportunities associated with them as a beneficial aspect of the patent system. See, e.g., Robert P. Merges, *A Transactional View of Property Rights*, 20 BERKELEY TECH. L.J. 1477, 1487–90 (2005) (describing how property rights, including patent rights, may induce parties to disclose information before, during, and after contract formation that they otherwise may withhold for fear that the value of their property will be lost).

17. See, e.g., Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, *Constructing Commons in the Cultural Environment*, 95 CORNELL L. REV. 657, 681–82 (2010) (“[P]atent and copyright laws construct particular environments with default boundaries governing access to and use of certain forms of knowledge. Commons arrangements grounded in those laws involve contextually specific deviations from the default given by IP law. These constructed cultural commons may lead to creativity, innovation, and improvement that would not be attainable either in the so-called ‘natural’ state of information without intellectual property protection or in the state of information with ‘full’ intellectual property protection.”); James Bessen & Alessandro Nuvolari, *Diffusing New Technology Without Dissipating Rents: Some Historical Case Studies of Knowledge Sharing* 1–3 (Bos. Univ. Sch. of Law, Working Paper No. 14-18, May 6, 2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2433567 [<https://perma.cc/DZ7U-QRUW>] (indicating that knowledge sharing at certain stages of technological innovation increased, rather than dissipated, rents for innovators, while also concluding that patents presented such innovators during the same stages with very little value).

purposes behind patent pledges. This Article discusses these informational functions from a theoretical standpoint and then applies that theory to several case studies of actual patent pledges.

Traditional patent law theories have remained rather agnostic about any possible informational value of patents, at least as pertains to the patent holder.¹⁸ Indeed, those theories that do argue that patents have informational value typically posit that that value belongs to the public, not the inventor.¹⁹ In other words, because obtaining a patent requires the inventor to disclose a significant amount of technical information relating to the invention as part of the patent application process, the public may benefit from those disclosures since they become publicly available once the application is published or the patent issues.²⁰

But according to traditional patent law theories, the real prize for the patent holder is the exclusive rights that a patent bestows upon the patent owner.²¹ These rights may, depending on the theory, incentivize the inventor to do a variety of socially beneficial things—such as invent something in the first place, publicly disclose the invention, or commercialize it later.²² But these rights do not provide the patent holder with any informational value.²³ Indeed, the purported informational value that the public derives from the patent is in direct opposition to the inventor's exclusive rights.²⁴ In other words, the patent holder sacrifices

18. See, e.g., Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 146 (2006) (arguing that “disclosure obligations [are] inconsistent with the theoretical justifications of patent law”); Clark D. Asay, *The Informational Effects of Patent Pledges*, in PATENT PLEDGES—GLOBAL PERSPECTIVES ON PATENT LAW'S PRIVATE ORDERING FRONTIER (Jorge L. Contreras & Meredith Jacob eds., forthcoming 2016) (reviewing this agnosticism).

19. See, e.g., Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 542 (2009); Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J.L. & TECH. 545, 557–59 (2012).

20. See generally Fromer, *supra* note 19 (citing information disclosures as a significant possible benefit of the patent system, but arguing that the system, as currently implemented, largely fails to perform this function).

21. Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 736–45 (2012) (describing utilitarian and commercialization theories as the predominant theories under patent law and making clear that in each school the prospect of exclusive rights is the key to encouraging inventors to develop inventions (utilitarian theory) and develop them post-invention (commercialization theory)).

22. *Id.* (outlining each of the predominant patent law theories and their typical rationales).

23. See Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 635 (2002) (indicating that traditional theories assume that inventors suffer losses when disclosing information and that exclusive rights are an attempt to balance that loss).

24. *Id.*

informational value in order to obtain her exclusive rights.²⁵ Her informational sacrifice is the “quid pro quo,” in the words of many courts and scholars, for her receiving exclusive patent rights.²⁶

But the patent pledging phenomenon shows that patents can provide patent holders and the public alike with significant informational value. This informational value comes in at least two different, but related, forms. First, patents provide informational value in the patent pledging context by enabling credible “signals” between the patent holder and participants in capital, labor, and product markets.²⁷ These signals may improve a sender’s ability to recruit talented employees, collaborate with competitors, and attract investment.²⁸ This Article draws on “signaling theory” from other disciplines in order to explain how patents can be useful in facilitating informational signals, thereby creating informational value for both patent owners and recipients thereof.²⁹

Second and relatedly, patents have informational value to patent owners and the relevant public based on the information disclosures the patenting process requires.³⁰ That is, these disclosures provide patent holders with a standardized, well-understood means by which to communicate information more generally.³¹ In turn, the public nature of

25. *Id.*

26. *See, e.g.*, *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 142 (2001) (“The disclosure required by the Patent Act is ‘the *quid pro quo* of the right to exclude.’” (quoting *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 484 (1974))).

27. Clarisa Long has done some prior work in which she argues that patents signal information to investors about a firm’s quality. *See* Long, *supra* note 23. However, Long limits herself to a patent’s possible signals to capital markets, and she does not consider patents in pledging contexts or what signaling functions patents may play in such circumstances. This Article thus builds on Long’s work while identifying key differences with it.

28. *See infra* Part IV for an extensive discussion of how companies have used patent pledges in order to accomplish such goals.

29. The literature on signaling is rich. For a few examples discussing signaling in a variety of circumstances, *see* James D. Morrow, *The Strategic Setting of Choices: Signaling, Commitment, and Negotiation in International Politics*, in STRATEGIC CHOICE AND INTERNATIONAL RELATIONS 86, 86–91 (David Lake & Robert Powell eds., 1999) (discussing signaling between international actors); ERIC A. POSNER, LAW AND SOCIAL NORMS 19, 22 (2000) (discussing signaling between social actors generally); A. MICHAEL SPENCE, MARKET SIGNALING: INFORMATIONAL TRANSFER IN HIRING AND RELATED SCREENING PROCESSES 107–09 (1974) (discussing signaling in the job market context); David H. Moore, *A Signaling Theory of Human Rights Compliance*, 97 NW. U. L. REV. 879 (articulating a signaling theory to explain human rights compliance by nation-states).

30. For an overview of these disclosure requirements, *see infra* Section II.A.

31. *See, e.g.*, Ouellette, *supra* note 19, at 556 (noting that the patent system is “entrenched” as part of the international patent system).

the disclosures benefits the relevant public because that public has access to and can verify and assess the information.³² Many have argued that patent disclosures have little informational value because patents are often not scrutinized. The lack of scrutiny is for a variety of reasons. For instance, there are simply too many patents to read, the patents may not disclose useful technical information even if they are read, and reading patents may result in enhanced liability under patent law's willful infringement standards.³³ But in the patent pledging context, many of these concerns dissipate because a pledge will often identify specific patents for the public's review and use, thus making the possibility of later willful infringement allegations less of a concern. Consequently, though informational uncertainties may remain,³⁴ the public has greater incentives to scrutinize the disclosures relating to the pledged patents, thereby creating informational value to both patent holders and the affected public.

These informational merits of patents thus suggest that the exclusionary value of patents, which predominant theories typically view as a patent's key value,³⁵ need not and should not dominate debates about how best to reform patent law. Instead, the informational value of patents should become a consideration in assessing patent law theory, cases, and doctrines, too. And this may be particularly so in industries, such as software and information technology (IT) more generally, where patent pledging is more typical. Indeed, some scholars have argued that patent law already is and should become even more industry-specific,³⁶ and the

32. Long, *supra* note 23, at 665–66 (discussing costs associated with verifying patented information, noting that some aspects of verification present low costs while some present high costs).

33. See, e.g., Alan Devlin, *The Misunderstood Function of Disclosure in Patent Law*, 23 HARV. J.L. & TECH. 401, 402–03 (2010) (concluding that patents are ineffective at conveying useful information to the public); Holbrook, *supra* note 18, at 146 (arguing that “disclosure obligations [are] inconsistent with the theoretical justifications of patent law”); Note, *The Disclosure Function of the Patent System (or Lack Thereof)*, 118 HARV. L. REV. 2007 (2005) (concluding that the patent system largely fails to disclose useful technical information to the public).

34. Lemley, *supra* note 21, at 746 (arguing that several factors lead to patent documents that are often opaque and that, consequently, patents may often be of dubious informational value to those reading them).

35. *Id.* at 736–45.

36. See DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* (2009) (arguing that patent law should be tailored according to industry in order to better foster innovation); Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology Specific?*, 17 BERKELEY TECH. L.J. 1155 (2002) (same); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1581–95 (2003)

informational roles of patents identified in this Article lend additional support to such arguments.

None of this is to say that the other roles of patents that traditional patent law theories emphasize are irrelevant in light of the patent pledging phenomenon. Indeed, patents owners can and often do use patents in a variety of ways, depending on their economic purposes in any given situation. Sometimes those uses will conform to traditional patent law theories, while in other cases those uses may be more informational in nature. Such multifaceted uses of patents are not contradictory, but instead simply demonstrate that patents have a variety of uses beyond what traditional patent law theories teach. As this Article will argue, greater recognition of such multi-dimensional realities would serve patent law and policy well.

This Article proceeds as follows. Part II provides a brief overview of traditional patent law theories. It shows that these theories treat rights of exclusion as the key value of a patent because of those rights' exclusionary potential. And to the extent that these theories consider a patent's informational value, they posit that the public, not the patent holder, realizes such value. In other words, patents have negative informational impacts on patent owners because patent owners must sacrifice information about their inventions in order to obtain the real prize of exclusive rights. Indeed, such information disclosures may curtail those rights in a variety of circumstances, further making clear—at least according to these theories—the negative informational effects that such disclosures can have on patent holders.

Part III then provides an informational account of patent rights. Contrary to traditional theories, this account shows that patents can provide patent holders and the public alike with significant informational value. This Part thus argues that patent holders increasingly use their patents in patent pledging scenarios, *inter alia*, in order to credibly and efficiently signal information to product, labor, and capital markets about their research and development activities and preferences. These signals may then translate into a variety of economic opportunities for both the signalers and the recipients thereof. In so doing, patent holders and the relevant public both realize significant informational value from patents. This Part also examines what features of the patent system make patents valuable in these regards.

(arguing that innovation is industry specific and that patent law should more readily adapt to that reality).

Part IV then reviews several examples of patent pledges in support of Part III's informational account of patents. In particular, it reviews pledges from Tesla, Microsoft, Twitter, and IBM in order to illustrate the informational value that these companies and the public may realize from the companies' patent pledging activities.

Part V turns to several recent Supreme Court decisions relating to patent law. The Supreme Court has been particularly active in the last few years in tackling key patent law questions³⁷ but has not explicitly taken into account the informational value of patents in rendering its decisions. This Part examines these cases based on this Article's informational account of patents and argues that several of the cases will likely boost the informational value of patents.

Finally, Part VI urges courts and policymakers to take into account the informational value of patents in rendering decisions and changes in patent law, particularly in industries, such as IT, where patent pledging is more typical. Indeed, the informational role of patents in some industries, but not others, provides additional support for the industry-specific patent law tailoring for which others have argued.

II. TRADITIONAL PATENT LAW THEORIES

As this Part will demonstrate, traditional patent law theories largely fail to identify any possible informational value of patent rights. This is particularly so with respect to the patent holder. Indeed, the patent holder is assumed to have suffered an informational loss in pursuit of the real prize of a patent: exclusive rights. Even those theories that focus on the informational value of patents typically suggest that this value belongs to the public, not the patent holder. Hence, these accounts also assume that the patent holder suffers an informational loss as part of the patenting process.

Section II.A first lays out patent law's information disclosure requirements. It does so because these requirements are the basis for how traditional patent law theories assess the informational value of patents (or lack thereof). Section II.B then analyzes traditional patent law theories in light of these disclosure requirements, concluding that traditional theories

37. See Lisa Larrimore Ouellette, *Supreme Court Patent Cases*, WRITTEN DESCRIPTION BLOG, <http://writtendescription.blogspot.com/p/patents-scotus.html> [<http://perma.cc/W522-77JG>] (listing all patent law cases that the Supreme Court has taken since 1952, and indicating that in recent years the Supreme Court has heard "quite a number of patent cases").

largely ignore the informational value of patents that is manifest in patent pledging contexts.

A. PATENT LAW'S DISCLOSURE REQUIREMENTS

Patent law's information disclosure requirements generally come in five parts. First, patent law's "enablement" requirement stipulates that a patent applicant must disclose enough technical details in the application to enable someone of ordinary skill in the particular "art" to practice the invention "without undue experimentation."³⁸ Though this enablement standard does not require patentees to disclose every relevant detail of their invention, it does require that patent applicants disclose sufficient technical information such that some skilled person would be able to replicate the invention without significant obstacles.³⁹

Second, patent law requires that an applicant disclose enough technical details so that a person of ordinary skill in the relevant field would recognize that the applicant had actually invented what she claims to have invented.⁴⁰ While this "written description" requirement often overlaps significantly with the enablement requirement discussed directly above, there are cases where this latter requirement forces the applicant to disclose more technical details than the enablement standard, alone, would require.⁴¹

Third, patent law requires patent applicants to disclose their "best mode" of practicing the invention.⁴² Though recent patent law reforms have significantly weakened this requirement, it technically remains on the books.⁴³ It thus may remain important in ensuring that patent applicants disclose technical details that they otherwise would withhold.⁴⁴

38. 35 U.S.C. § 112(a) (2012); *see also* Sean B. Seymore, *Heightened Enablement in the Unpredictable Arts*, 56 UCLA L. REV. 127, 139–54 (2008).

39. *See, e.g.*, *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1058, 1070–71 (Fed. Cir. 2005) (finding sufficient enablement based in part on tacit knowledge of one skilled in the art, and clarifying that enablement does not require disclosure of every detail of the claimed invention).

40. 35 U.S.C. § 112(a); *see also* Dennis Crouch, *An Empirical Study of the Role of the Written Description Requirement in Patent Examination*, 104 NW. U. L. REV. 1665, 1669 (2010) (discussing the role of the written description requirement generally).

41. *See, e.g.*, *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473 (Fed. Cir. 1998).

42. § 112(a).

43. *See, e.g.*, Brian J. Love & Christopher B. Seaman, *Best Mode Trade Secrets*, 15 YALE J.L. & TECH. 1 (2012) (discussing the gutting of this requirement, while also noting that it nonetheless remains a requirement that may still be legally enforceable).

44. *Id.*

Fourth, patent law also requires applicants to state their inventions in definite and clear terms in the form of “claims” towards the end of the patent document.⁴⁵ Patent claims are often analogized to the “metes and bounds” of a land deed, whereby the applicant charts out the periphery or boundaries of that to which they purport to have exclusive rights.⁴⁶ The frequently cited rationale for requiring patent claims is that they help provide the public with clearer notice of what the patent holder alleges to own, and what, therefore, remains unencumbered.⁴⁷

Last, generally all of these disclosures eventually become publicly available once a patent application is published and indexed, typically eighteen months from the time the patent application was filed, or once the patent actually issues.⁴⁸ Hence, in most cases the disclosures required as part of the application process become accessible to the public.

B. HOW TRADITIONAL PATENT LAW THEORY TREATS THE POSSIBLE INFORMATIONAL VALUE OF PATENTS

With few exceptions, traditional patent law theories view these information disclosures as a sacrifice that an inventor must make in order to obtain the real prize of a patent: exclusive rights. And if anything, these theories typically view these information disclosures as a potential threat to the rights that inventors do have.

For instance, the dominant theory behind patent law is utilitarian, sometimes called “economic incentives” theory.⁴⁹ This school of thought views patent rights as necessary economic incentives to inventive behavior.⁵⁰ That is, patents are necessary because, without granting these exclusive rights, inventors may be reluctant to engage in inventive activity for fear that they will not be able to internalize the benefits of their

45. § 112(b); *see also* *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014) (setting forth a new standard for determining whether patent claims are “definite” enough); *see generally* Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719 (2009) (discussing claiming within patent law generally and contrasting it with the claiming system within copyright law).

46. Richard L. Wynne, Jr., *Patent Law: Warner-Jenkinson Co. v. Hilton Davis Chemical Co.: How Can the Federal Circuit Control the Doctrine of Equivalents Following the Supreme Court’s Refusal to Set the Standard?*, 50 OKLA. L. REV. 425, 436 (1997) (discussing this often-employed analogy and citing cases that use it).

47. *Id.* at 444–45.

48. § 122.

49. Lemley, *supra* note 21, at 736–38 (describing the utilitarian model as “orthodox”).

50. *Id.*

inventive activity.⁵¹ The primary basis for this fear is that inventive ideas are non-rivalrous and non-excludable, that is, inventions have the characteristics of a public good.⁵² Consequently, absent patent rights, competitors could simply practice the inventive idea without incurring the same costs that the inventor did in developing it.⁵³ A patent's rights of exclusion purportedly address this concern and thereby incentivize parties to engage in inventive behavior.⁵⁴

Traditional applications of utilitarian theory thus largely ignore any possible informational value of patents to the patentee. And to the extent that the informational dimensions of patents are taken into account, they are framed negatively. As one scholar notes, inventors "are assumed to suffer losses when information is made public, a loss exclusive rights attempt to compensate."⁵⁵ Other scholars question whether these exclusive rights adequately compensate for the disclosures, given that a patent's information is typically made public before the exclusive rights are actually granted.⁵⁶

Indeed, patents' negative informational impact on inventors may be even more pronounced when disclosures made in compliance with patent law ultimately limit the scope of a patent holder's claims. For instance, while courts are generally not supposed to read limitations from these information disclosures into patent claims,⁵⁷ core patent law doctrine also requires that patent claims be read in light of the patent specification, where these disclosures are found.⁵⁸ As discussed above, patent claims are not supposed to exceed whatever the inventor has enabled others to practice through her disclosures, or what the inventor has shown to have invented through the same disclosures.⁵⁹ So to the extent that an inventor claims more technical territory than is justified on the basis of her information disclosures, the information disclosures may operate to limit

51. Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 993–94 (1997).

52. Holbrook, *supra* note 18, at 132–33 (discussing these aspects of intellectual works as well as their purported consequences); Eric E. Johnson, *The Economics and Sociality of Sharing Intellectual Property Rights*, 94 B.U. L. REV. 1935, 1940–42 (2014) (same).

53. Sources cited *supra* note 52.

54. Lemley, *supra* note 51.

55. Long, *supra* note 23, at 635.

56. Holbrook, *supra* note 18, at 132–35.

57. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–23 (Fed. Cir. 2005) (en banc) (reviewing the standards for construing patent claims).

58. *Id.*

59. *See supra* Section II.A.

their rights of exclusion. And since exclusive rights are the key benefit under the utilitarian model, information disclosures and the possible limitations that they impose on those rights come out a net negative under this theoretical framework. In sum, under the utilitarian model patents fail to provide inventors with informational value, instead requiring, if anything, an informational sacrifice.⁶⁰

Other predominant patent law theories are similar to traditional utilitarian theory in treating the informational impact of the patenting process on inventors as either a possible negative (because they may work to limit a patentee's exclusive rights) or an outright sacrifice. For instance, prospect theory treats exclusive rights as the key to incentivizing post-invention research and development.⁶¹ According to this theoretical school, granting broad exclusive rights to inventors early gives them the proper economic incentives to further develop, commercialize, and license their inventions for the benefit of society.⁶² A related school of thought, commercialization theory, posits that additional exclusive rights are often necessary in order to ensure that inventions are commercially developed for society's benefit.⁶³

Hence, in both of these accounts and similar to utilitarian theory, exclusive rights are the key to making the patent system work. And these rights are crucial to inventors because of the direct economic benefits that they promise, not because of any informational value that patent rights may otherwise represent.⁶⁴ For instance, information disclosures, to the extent that they figure into these theoretical accounts, are either a possible

60. Of course, another view may be that utilitarian theory is either agnostic to or even supportive of patent law's information disclosure requirements. After all, if the fit between a patent's claims and information disclosures is properly done, the information disclosures support, rather than possibly diminish, a patentee's exclusive rights. But even under this view, exclusive rights remain the key benefit of the patent. Information disclosures only become a benefit to the extent they bolster such rights; they have no inherent value of their own, at least according to the utilitarian model in patent law.

61. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266-71 (1977).

62. *Id.*

63. See, e.g., Michael Abramowicz & John F. Duffy, *Intellectual Property for Market Experimentation*, 83 N.Y.U. L. REV. 337 (2008) (arguing that current IP law may not adequately incentivize market experimentation and suggesting that it may need to expand in order to provide the proper level of incentives for such experimentation); Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341 (2010) (proposing a "commercialization" patent, in addition to traditional patents, in order to better incentivize post-invention commercialization of patented technologies).

64. BURK & LEMLEY, *supra* note 36, at 1600 (discussing the economic importance of licensing opportunities under traditional prospect theory).

diminution of those rights or, at best, a support to them.⁶⁵ But even in the supporting role, the disclosures do not appear to have any inherent value of their own. In other words, patents have little informational value to the patent holder under these accounts. And any informational value of patents that may accrue to the public is irrelevant to the functioning of patents that these theories envision.⁶⁶

“Disclosure” and “coordination” theories are even clearer that patent law’s information disclosure requirements are a necessary sacrifice on the part of the inventor. These theories generally posit that inventors will be reluctant to share technical information relating to their inventions, either with the public or other third parties, without having exclusive rights in their inventions.⁶⁷ This hesitancy stems in part from a fear that, without exclusive rights in the inventions, inventors will fail to capture the economic value of their inventions, while others will.⁶⁸ Hence, in order to properly incentivize inventors to share information regarding their inventions, patent law grants inventors exclusive rights in their patented inventions. Those rights purportedly enable them to better capture the economic value of their inventions.⁶⁹ But in return, inventors are required to satisfy patent law’s information disclosure requirements by providing technical information that, according to some strands of these theories, they would otherwise keep secret.⁷⁰ Hence, while the public may obtain

65. Holbrook, *supra* note 18, at 135–36 (arguing that the “teaching function” of patents is irrelevant to prospect theory).

66. *Id.*

67. *See, e.g.,* *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 481 (1974) (describing the inventors’ disclosures as the “quid pro quo” for granting the inventor exclusive rights in their invention); WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 326–30 (2003) (elaborating on the coordination function and value of patents); Paul J. Heald, *A Transaction Costs Theory of Patent Law*, 66 OHIO ST. L.J. 473, 488–89, 497 (2005) (arguing that patents help address concerns about information misappropriation and thus encourage information sharing); Robert Mazzoleni & Richard R. Nelson, *Economic Theories About the Benefits and Costs of Patents*, 32 J. ECON. ISSUES 1039–40 (1998) (describing different strands of disclosure theory generally); *Merges, supra* note 16 (describing how property rights, including patent rights, may induce parties to disclose information before, during, and after contract formation that they otherwise may withhold for fear that the value of their property will be lost).

68. *Merges, supra* note 16; *see also* Nancy T. Gallini, *The Economics of Patents: Lessons from Recent U.S. Patent Reform*, 16 J. ECON. PERSP. 131, 132 (2002) (suggesting that patents may induce parties to disclose information that they may otherwise withhold).

69. *Merges, supra* note 16.

70. Ouellette, *supra* note 19, at 555–62 (discussing this “quid pro quo” strand of disclosure theory and its critiques).

informational value from an inventor's patent,⁷¹ the inventor herself loses informational value in exchange for exclusive rights.

Of course, it is certainly true that under coordination and disclosure theories, patents have informational value to inventors in the sense that exclusive rights allow inventors to better appropriate the value of their inventions. As discussed, these theories generally posit that patents allow inventors to derive value from their technical information by protecting it against appropriation.⁷² But patents are still a net negative to inventors in terms of informational impact. This is so because, all else being equal, these theories suggest that inventors would rather keep the information to themselves. While the economic prospect of exclusive rights may motivate them to disclose their information as part of a patent application,⁷³ these theories indicate that if inventors could simultaneously obtain these exclusive rights while keeping their inventions secret, they would.⁷⁴ Hence, while exclusive rights may provide inventors with significant economic compensation in return for their disclosures, the disclosures nonetheless remain a loss to inventors.⁷⁵

A remaining theoretical camp—"natural rights" theorists⁷⁶—is, at first blush, somewhat less straightforward in how it incorporates the informational value of patents—or lack thereof—within its reasoning. For instance, these theories might be viewed as less instrumental than other theoretical camps, because they surmise that intellectual property rights, including patent rights, arise based in large part on the effort and/or personhood with which an inventor has imbued her invention.⁷⁷ And if they are less instrumental because they are not focused on inducing

71. *Id.* at 559–62 (providing evidence that patent disclosures do in fact provide value to parts of the public, contrary to some earlier critiques).

72. *See supra* note 67 and accompanying text.

73. Andrew A. Schwartz, *The Corporate Preference for Trade Secret*, 74 OHIO ST. L.J. 623, 630–33 (2013) (discussing the traditional understanding of how parties choose between trade secrecy and patents for their inventions and innovations).

74. Long, *supra* note 23, at 635 (indicating that inventors are assumed to suffer losses when disclosing information and that exclusive rights are meant to balance that loss).

75. *Id.*

76. *See* Mark A. Lemley, *The Rise of Faith-Based IP*, 62 UCLA L. REV. 1328, 1337 (2015) (describing and critiquing this group of scholars on the basis of their purported lack of reliance on evidence); ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY (2011).

77. *See* Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533 (1993); Merges, *supra* note 76; David Opderbeck, *Beyond Bits, Memes, and Utility Machines: A Theory of Intellectual Property as Social Relations*, 10 U. ST. THOMAS L.J. 738 (2013); Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982).

invention, disclosure, commercialization, or some other similar goal, this may mean that the role that information disclosures and exclusive rights play in these theories is less relevant—or less clear—than in other theoretical camps.

Yet in vital respects, exclusive rights seem to play a similar role under natural rights theories as they do in other theoretical camps. That is, even if the basis for such rights under natural rights theories differs, exclusive rights remain key because they help protect the effort and/or personhood of the inventor.⁷⁸ And to the extent that information disclosures made as part of the patenting process limit those rights, they would have a negative impact on the natural rights of inventors. Or if the information disclosures are properly calibrated to what the inventor actually hopes to protect, they may be viewed in some sense as a positive. But as with other theoretical schools, exclusive rights remain a patent's key value, even if the information disclosures ultimately support that value. The informational value of patents, in other words, may subsist, if at all, in apprising the public of the inventor's exclusive rights. But those rights are ultimately the key value of the patent in the natural rights camp, too, because they protect an inventor's purported inherent interests.

III. THE INFORMATIONAL VALUE OF PATENTS

Under predominant patent law theories, then, patents have little if any informational value to the patent holder. The information disclosures required as part of the patenting process may certainly have some value to the public at large, which remains a topic of vigorous scholarly debate.⁷⁹ But the real prize for the patent owner remains a patent's exclusive rights because of the economic possibilities that those rights represent. And to the extent that patent law's disclosure requirements detract from those rights, these information disclosures may have a negative impact on the patent owner.

This Article argues, however, that patents can provide significant informational value to the patent owner, not just the public. And the information disclosures that patent law requires, as well as exclusive rights, are key to creating that value, as the following sections explore.

78. Gordon, *supra* note 77; Radin, *supra* note 77.

79. See, e.g., Fromer, *supra* note 19, at 547–96 (concluding that current patent law disclosure requirements do not adequately stimulate innovation); Ouellette, *supra* note 19, at 552–566 (concluding that nanotech researchers often do rely on patented information in their innovative efforts).

A. SIGNALING THEORY AND PATENTS

As briefly mentioned in the Introduction, one of this Article's primary arguments is that patent holders use patents in patent pledging contexts in order to credibly signal information to product, labor, and capital markets, and that these signals can result in the sender and recipient of such signals realizing significant informational value. In order to better show how this may be so, this Part now turns to a brief discussion of signaling theory.

Signaling theory has a long history in a variety of disciplines.⁸⁰ This Article does not attempt to exhaustively canvass that extensive literature. Nor does it suggest that any particular strand of signaling theory precisely matches the behaviors of patent pledgers in signaling information to product, labor, and capital markets in each instance. Instead, it argues that some basic tenets of signaling theory provide a useful conceptual lens by which to better understand the previously underappreciated informational functions of patents in patent pledging contexts.

A signal can be understood as a costly behavior meant to communicate information about the sender to recipients.⁸¹ And the cost of the behavior is a crucial piece of the informational communication.⁸² That is, recipients of the signal appreciate that "only senders with a particular characteristic can afford, or are willing, to send the signal."⁸³ Appreciation of this characteristic based on the signal may then result in some mutually beneficial outcome between the parties.⁸⁴ The signal thus communicates information to recipients that, but for the signal, they may otherwise have difficulty discerning or trusting.⁸⁵

An example helps better illustrate this theory in practice. For instance, educational attainment may function as a signal to potential employers that a candidate will be productive.⁸⁶ This is so, in part, because of the opportunity, monetary, and psychological costs involved in obtaining an education.⁸⁷ Without these costs, the signal may be a poor proxy for future productivity, since everyone could obtain the same credentials at no cost.⁸⁸

80. See sources cited *supra* note 29 and accompanying text.

81. See Moore, *supra* note 29.

82. *Id.*

83. *Id.* at 882.

84. *Id.*

85. *Id.*

86. See Michael Spence, *Job Market Signaling*, 87 Q.J. ECON. 355, 358 (1973).

87. See *id.*

88. See *id.*

This signal may thus help employers make more rational hiring choices, as well as help potential employees obtain well-paying jobs.⁸⁹

In patent pledging contexts, patents can play similar roles. Some previous scholarship has applied signaling theory to patent law. For instance, Clarisa Long has argued that obtaining patents is valuable to parties because doing so credibly signals to capital markets that the party obtaining the patent is a firm worth investing in, which is a characteristic that may be otherwise difficult to verify.⁹⁰ That signal is credible in part because of the costs that obtaining a patent may entail, as well as the ability of third parties to verify some of the information that patents convey.⁹¹ Such signals may then translate into market support for the party obtaining the patent.⁹² Long points to this function of patents in attempting to explain why parties continue to spend time and resources amassing patents, when the evidence shows that very few patents are ever enforced or translate into direct economic benefits in the form of royalties or other economic remuneration.⁹³ Other studies have provided some empirical evidence in support of Long's arguments.⁹⁴

This Article builds on these previous studies, while arguing that the informational potencies of patents go beyond what they propose. Patents provide informational value to inventors and the public, not only within

89. *Id.*

90. Long, *supra* note 23.

91. *Id.*

92. Ted Sichelman & Stuart J.H. Graham, *Patenting by Entrepreneurs: An Empirical Study*, 17 MICH. TELECOMM. & TECH. L. REV. 111, 115 (2010) (finding evidence that many startups rely "heavily on patents as signals to the market to improve their chances of raising financing, being acquired, and going public," and that this evidence lends support to signaling patent law theories).

93. Long, *supra* note 23, at 626–27; *see also* Edmund W. Kitch, *Property Rights in Inventions, Writings, and Marks*, 13 HARV. J.L. & PUB. POL'Y 119, 122–23 (1990) (concluding that most patents are so narrow that they are relatively worthless); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1503–04 (2001) (showing that many issued patents are abandoned, presumably because of their weak economic prospects); Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH L.J. 577, 603 (1999) (concluding that most patented technologies will fail commercially and/or present few economic advantages).

94. *See, e.g.*, Stuart J.H. Graham et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 BERKELEY TECH. L.J. 1255, 1307 (2009) (suggesting that patents are important to startups as a signal to investors of discipline and quality); Darian M. Ibrahim, *Financing the Next Silicon Valley*, 87 WASH. U. L. REV. 717, 750–51 (2010) (discussing that patents have value as signals to investors); Sichelman & Graham, *supra* note 92 (same).

capital markets, but also within labor and product markets.⁹⁵ The phenomenon of patent pledging, as will be discussed more fully in Part IV *infra*, provides significant evidence of patentees using patents as informational tools in this broader range of scenarios.

Furthermore, Long's work seems to largely treat features of patents, such as rights of exclusion and information disclosures, as somewhat irrelevant to a patent's signaling functions. For instance, Long does not appear to view rights of exclusion as important to her signaling theory of patents.⁹⁶ Indeed, she notes that her article is meant to show that exclusive rights represent only one particular function of a patent.⁹⁷ Even patent law's information disclosures may be irrelevant to her brand of signaling theory because, as other scholars suggest, the actual "disclosure of any given patent is not terribly relevant to the signal."⁹⁸ Instead, what is important for purposes of previous brands of signaling theory as applied to patent law is, simply, that a patent exists.⁹⁹ If the market had to actually review the contents of the patent in order to assess the technical merits of the invention, for instance, then the informational advantages of the patent purportedly diminish.¹⁰⁰

In contrast, this Article argues that, in patent pledging scenarios, both exclusive rights and information disclosures play a key role in creating a patent's informational value, as a signal and otherwise. And both patentees and the relevant public realize this value. The next Sections assess how.

B. HOW EXCLUSIVE RIGHTS CAN BOLSTER THE INFORMATIONAL FUNCTIONS OF PATENTS

As discussed, traditional patent law theories typically treat a patent's rights of exclusion as the key value of a patent.¹⁰¹ Exclusive rights are valuable under these views because they represent an economic prize to inventors that incentivizes them to develop, disclose, or further develop

95. Long does note the possibility of patents being useful in signaling information to labor markets. *See* Long, *supra* note 23. But her article primarily focuses on what signals patents convey to capital markets.

96. *Id.* at 627 (challenging "the traditional assumption that exclusivity is the alpha and the omega of the private value of patent rights" and instead arguing that patents have value as a tool for "credibly publicizing information").

97. *Id.*

98. Holbrook, *supra* note 18, at 137–38.

99. *Id.*

100. Long, *supra* note 23, at 665 (discussing how such assessments may offset whatever informational gains a patent may otherwise represent because, for instance, determining whether a patent is valid entails significant costs).

101. *See supra* Section II.B.

their inventions for the benefit of society.¹⁰² Or, in the natural rights camp, exclusive rights are valuable because they help protect an inventor's inherent rights in their inventions.¹⁰³

Rights of exclusion are also important in this Article's informational account of patents, but for different reasons. For instance, if a party wishes to signal to capital, labor, or product markets information about that party through a patent pledge, a patent's rights of exclusion make that signal much more credible. This is so because, as with traditional signaling theory, sacrificing these otherwise valuable economic rights as part of a pledge is costly behavior that may aid the signal's recipients in inferring attributes of the signaler that are otherwise difficult to verify or trust.¹⁰⁴ These signals may thus lead the signaler and recipient of the signal to pursue economic opportunities in accordance with the signal's apparent message.¹⁰⁵

To illustrate: a party wishing to signal its intention to collaborate with others around core technologies, to pursue an open model of innovation, or to provide a certain type of working environment to employees may not convey much of a message through mere lip service.¹⁰⁶ In other words, it is difficult to give credence to such intentions if the signaler does not back up those intentions with something more than simply a public announcement.¹⁰⁷ Purporting to sacrifice a government-sanctioned property right,¹⁰⁸ on the other hand, helps underscore the seriousness and credibility of the message, as well as the future intentions of the pledger. And this is so, in part, because such a sacrifice entails costs. Indeed, such costs may also aid the signal recipient in inferring characteristics about the signaler that are otherwise difficult to observe, such as the culture of the company more generally.

Relatedly, rights of exclusion help establish a key baseline against which an informational signal can be assessed. For instance, if a party

102. *Id.*

103. *Id.*

104. Spence, *supra* note 29.

105. *Id.*

106. See Jack L. Goldsmith & Eric A. Posner, *Moral and Legal Rhetoric in International Relations: A Rational Choice Perspective*, 31 J. LEGAL STUD. 115, 125–29 (2002) (referring to costless communication intended to facilitate coordination in international relations as cheap talk).

107. *See id.*

108. Under the Patent Act, patents are explicitly defined as a property right. See 35 U.S.C. § 261 (2012) (indicating that “patents shall have the attributes of personal property”).

possesses a trove of key patented inventions in a particular technological area and publicly pledges that the public may use them, the surrendered right of exclusion in such a case more ably conveys the magnitude and credibility of the commitment.¹⁰⁹ If, on the other hand, a party commits to license to the relevant public a few relatively insubstantial patents covering non-essential technologies, the signal might be of enduring exclusion rather than clear inclusion.¹¹⁰ Indeed, a party's failure to pledge patents at all, particularly as the patent pledging phenomenon spreads in IT and other industries, would also appear to signal to markets information about the non-pledger's business strategies and company culture more generally. But in each of these cases, a patent's initial endowment of exclusion is essential to effectively signaling to various markets the patent holder's intentions, as well as in some cases characteristics of the signaler that may otherwise be difficult to observe. And these signals, in turn, may ultimately lead parties to alter their behavior in reliance on the signal, such as two parties collaborating together or labor market participants pursuing employment opportunities with the signaler.¹¹¹

Of course, rights of exclusion can also potentially disserve informational purposes. Perhaps the most obvious reason is that enduring rights of exclusion may make relying on a supposed informational signal risky.¹¹² For instance, in the patent pledging context, scholars have wrestled with whether such pledges are legally enforceable, and whether they should be.¹¹³ Given such legal uncertainties, the informational takeaway for recipients of patent pledges may be simply one of avoidance.¹¹⁴ In other words, despite whatever informational signals a

109. In contrast, some have complained when parties have pledged to the public patents that they perceive as insignificant. *See, e.g.*, Florian Mueller, *Google's Promise Not to Assert 10 Patents Against Open Source Software: Just a PR Stunt*, FOSS PATENTS (Mar. 28, 2013), <http://www.fosspatents.com/2013/03/googles-promise-not-to-assert-10.html> [<http://perma.cc/VK99-J7F2>].

110. *Id.*

111. Contreras, *supra* note 4 (arguing that such inducement should be legally enforceable).

112. For this reason, some scholars have advocated for a more robust licensing means of pledging patents to a commons. *See, e.g.*, Jason Schultz & Jennifer M. Urban, *Protecting Open Innovation: The Defensive Patent License as a New Approach to Patent Threats, Transaction Costs, and Tactical Disarmament*, 26 HARV. J.L. & TECH. 1 (2012) (proposing the Defensive Patent License as a surer way to protect open innovation against patent risks).

113. *See, e.g.*, Contreras, *supra* note 4 (arguing that patent pledges, to the extent that they induce market reliance, should be enforceable).

114. *See* Eric Blattberg, *Here's What Tesla's 'Good Faith' Patent Stance Actually Means*, VENTUREBEAT (June 14, 2014), <http://venturebeat.com/2014/06/14/heres-what-teslas>

patent pledger may have otherwise intended, the enduring presence of exclusive rights may carry a powerful message of its own: the ongoing possibility of those rights being asserted.¹¹⁵

But the key to resolving such possible conflicts would seem to lie with the patent holder. That is, a patent holder should be able to eliminate a great deal of informational uncertainty if they so desire by crafting a patent pledge in a clear and unequivocal manner.¹¹⁶ Of course, a patent's basic exclusionary nature can certainly trip up clumsy patent owners who, despite a desire to signal a purpose of inclusion through a permissive patent pledge, simply fail to communicate their intentions accordingly. But such informational blunders remain the fault of the patent owners, not patents themselves.

Furthermore, the risk of a patent pledger ultimately enforcing its rights against a party relying on the pledge may be negligible for other reasons. For instance, a public patent pledge, even if crafted somewhat ambiguously, may at least mean that the pledger is more willing to enter into a contractual relationship with third parties for clear access to the patented technologies. Indeed, in many cases third parties may prefer a contract over simple reliance on the pledge. Hence, even if a pledge in any given situation is less than perfect as a signal, it may still signal some information to the public that the pledger and recipients ultimately act upon, in this example in the form of a contractual relationship.

Of course, as briefly discussed above, many patent owners may not, in fact, desire to completely eliminate uncertainty as to their intentions through a public patent pledge, and that enduring uncertainty may be an important part of their informational purpose.¹¹⁷ In other words, a patent signal's primary informational purpose may be one of equivocation, which can serve the purpose of keeping competitors guessing as to the pledger's intentions.¹¹⁸ Or in other cases, the informational purpose behind a patent

-good-faith-patent-stance-actually-means [http://perma.cc/V7N6-55KC] (indicating that few if any major car manufacturers will simply rely on Tesla's pledge without more concrete contractual terms in place).

115. Cf. Schultz & Urban, *supra* note 112 (arguing, in part because of such possibilities, for adoption of a clear license that allows for use of patented technologies).

116. Some have criticized Tesla's pledge on this basis because, for instance, it equivocates by indicating that only those who use its patented technologies in "good faith" may benefit from the pledge. In other words, parties will be loathe to simply rely on the pledge absent a clearer license to the patented technologies. See Blattberg, *supra* note 114.

117. See, e.g., *supra* Section III.B (discussing Microsoft, whose patent pledges appear to fit this mold in certain respects).

118. *Id.*

pledge may be of signaling enduring exclusion, such as when a patent pledger carefully selects and pledges only patents relating to non-essential technologies.¹¹⁹ And such intentions are perfectly compatible with using patents as informational tools, since the varied values and uses of patents are not mutually exclusive.

In sum, the rights of exclusion that come with a patent are certainly valuable to some parties because they allow them to procure direct economic benefits through their exercise. But the same rights are also valuable as a key means by which patent pledgers credibly signal to the public a party's intentions of inclusion, exclusion, or a mix of both.

C. THE INFORMATIONAL VALUE OF PATENT LAW'S DISCLOSURE REQUIREMENTS

Patent law's disclosure requirements, as outlined in Section II.A above, are also important in facilitating the role and value of patents as informational tools in the patent pledging context. For instance, they provide pledgers with a ready means by which to signal information. That is, because patent applicants are required to make these disclosures as part of the application process,¹²⁰ and those disclosures become publicly available in most cases,¹²¹ the patent document itself becomes a standardized means by which to relay information to the public.¹²² And this standardization makes the costs of verifying certain aspects of the signal quite low in important respects.¹²³

Thinking of alternatives for credibly sending signals and facilitating information disclosure more generally helps illustrate the importance of the patent system in these regards. For instance, imagine that a company did not obtain patents on many of its innovations and instead, to the

119. *Id.*

120. 35 U.S.C. § 112 (2012) (specifying patent law's disclosure requirements).

121. § 122 (providing for publication of a patent application, either eighteen months after filing of the application or upon issuance of the patent).

122. ESTEBAN BURRONE & GURIOBAL SINGH JAIYA, WORLD INTELL. PROP. ORG., INTELLECTUAL PROPERTY (IP) RIGHTS AND INNOVATION IN SMALL AND MEDIUM-SIZED ENTERPRISES 3 (2004), http://www.wipo.int/sme/en/documents/pdf/iprs_innovation.pdf [<http://perma.cc/N9MG-ACT5>] (estimating that nearly 70% of the world's technical knowledge is contained in patents, and concluding that most of such information is never published anywhere else); Fromer, *supra* note 19, at 554–60 (discussing the primacy of the patent document in disclosing technical information to the public).

123. Long, *supra* note 23, at 665–66 (discussing costs associated with verifying patented information, noting that some aspects of such verification present low costs, while some present high costs).

extent possible, kept its innovations secret.¹²⁴ If it later decided to pledge these secrets to the public based on changing innovation preferences, the lack of patents in facilitating that pledge may prove to be a significant obstacle. For instance, the company would be forced to spend significant time and resources collecting and documenting the information that it wished to share with the public.¹²⁵ And even if it did so, the form and substance of the information may be difficult for the public to navigate.¹²⁶

Patented information, on the other hand, provides several significant advantages. First, as mentioned, the patent document discloses technical information in a formalized, well-understood format.¹²⁷ Hence, even where inadequacies remain in the document,¹²⁸ its standardized nature will mean that, in most cases, third parties should have a greater ability to comprehend it in comparison to the alternative discussed above.¹²⁹ Second and relatedly, patented information allows patent pledgers to be more precise in their messaging. In other words, because the patent includes formal patent claims that identify the boundaries of what the patent covers, the patent provides pledgers with a ready means by which to identify more specifically what the pledge does and does not cover.¹³⁰

Third, as discussed in the preceding Section, a patent's exclusive rights can also aid the patent pledger in using patents as informational tools. Hence, combining the informational potencies of such rights with the

124. This may be an option even in cases where companies, such as Tesla, distribute commercially available products containing the inventions. *See* Fromer, *supra* note 19, at 558 (“Inventors also will not necessarily learn about the most useful innovations from the mere existence and reverse-engineering of commercially available products because commercial success is not that well-correlated with the quality or usefulness of an inventive leap.”).

125. This is not an insurmountable hurdle, however, as many companies engage in this type of behavior and may see advantages in doing so. *See, e.g.*, Oren Bar-Gill & Gideon Parchomovsky, *The Value of Giving Away Secrets*, 89 VA. L. REV. 1857 (2003) (discussing why parties in many cases choose to publish their inventions, rather than patent them). Nonetheless, the patent document remains the primary means by which to convey technical information to the public. *See* Fromer, *supra* note 19, at 560 (“By process of elimination, the patent document is the principal way for an interested technologist to locate useful information about a patented invention.”).

126. *Id.*

127. BURRONE & JAIYA, *supra* note 122.

128. Fromer, *supra* note 19, at 563 (providing an overview of systematic deficiencies in patent disclosures).

129. BURRONE & JAIYA, *supra* note 122.

130. 35 U.S.C. § 112(b) (2012) (setting forth patent law's claiming requirement); *see also* Fromer, *supra* note 45 (discussing generally how patent law's claiming system might be improved).

informational advantages of patent law's disclosure requirements makes the patent system difficult to match in terms of informational advantages.

Last, a homegrown solution would fail to provide companies with non-informational value that patents may otherwise confer. For instance, even when pledging patents, companies may want to retain the ability to use those pledged patents defensively as "sticks" against those who may assert their patents against the pledger. Hence, patents may provide patent pledgers not only with informational value, but with defensive value as well. This final point again underscores a key point: patents can confer on their owners a variety of different types of value simultaneously. While the informational value of a patent may be significant to a patent holder, that value need not be the only value they derive from their patent.

Thus, though scholars have long debated whether patents are effective at communicating information, these scholars have typically focused almost exclusively on whether those communications benefit the public.¹³¹ And they have conducted their analysis through the lens of traditional patent law theories, which treat information disclosures as a sacrifice to the patent owner, and exclusive rights as the key value to her.¹³² In contrast, this Article argues that these information disclosures can be a key source of value to patent holders, as well as the public, when viewing patents as informational tools.

Indeed, when parties use patents as informational tools, such as in the patent pledging context, many of the purported deficiencies of patent law's disclosure requirements wane. For instance, commentators have often argued that innovators largely ignore patents when pursuing technological innovation,¹³³ either because patents do not disclose useful technical information,¹³⁴ there are too many patents to read,¹³⁵ or because inventors fear claims of willful infringement.¹³⁶

131. See Devlin, *supra* note 33; Fromer, *supra* note 19; Ouellette, *supra* note 19; Note, *supra* note 33.

132. See *supra* Section II.A.

133. Iain M. Cockburn & Rebecca Henderson, *Survey Results from the 2003 Intellectual Property Owners Association Survey on Strategic Management of Intellectual Property* (2003), http://www.ipo.org/wp-content/uploads/2013/04/survey_results_revised.pdf [<http://perma.cc/VPS6-K58G>] (reporting that 65% of the surveyed intellectual property rights owners do not always read patents before pursuing innovation); Fromer, *supra* note 19, at 561 (reviewing evidence that suggests that most inventors do not know of related patents until after their own invention is completed).

134. See Devlin, *supra* note 33, at 403 (arguing that information disclosed in patents often fails to satisfy patent law's disclosure requirements and thus fails to be useful to others); Lemley, *supra* note 21, at 746 (arguing that several factors lead to patent documents that are often opaque and, therefore, of dubious value to those reading them);

But when parties use patents as informational tools, the likelihood that parties will read and rely on technical information in these patents increases. First, parties will almost certainly have fewer concerns about willful infringement in inspecting the patents, especially if the pledge is permissive in nature and thus signals an inclusionary intent on the part of the patent holder.¹³⁷ Second, specifically identifying patents as part of a patent pledge may increase the likelihood that others will assess such patents, because the publicity surrounding the pledge naturally increases interest in the patented technologies themselves.¹³⁸ Though the oft-cited opaqueness of patents remains a concern,¹³⁹ other recent evidence suggests that patents are a more valuable source of technical information than others have argued.¹⁴⁰ In short, when parties use patents as informational tools, they create informational value for both themselves and the relevant public, while simultaneously addressing many of the perceived problems with patents as effective “teachers” of information.¹⁴¹

In sum, patent law’s information disclosure requirements and rights of exclusion play surprising roles when viewing patents as informational tools. Rights of exclusion can become a key means of inclusion for patent pledgers and others using patents as a signaling mechanism. And information disclosed as part of the patent application process, rather than

Note, *supra* note 33 at 2025–26 (arguing that patent documents often fail to enable others to reproduce the patented technology and that patents are often drafted in a way that reduces their value to third parties).

135. Lemley, *supra* note 21, at 746 (arguing that the vast number of patents applied for and issued each year make reading all the relevant patents a “Herculean task”).

136. *Id.* (explaining that “lawyers often advise engineers not to read competitor patents for fear of becoming a willful infringer”); Doug Lichtman, *Substitutes for the Doctrine of Equivalents: A Response to Meurer and Nard*, 93 GEO. L.J. 2013, 2023 (2005) (arguing that very few innovators read patents for fear of willful infringement).

137. This may be even truer if innovators are less concerned with willful infringement than is often supposed, as some recent scholarship suggests. Ouellette, *supra* note 19, at 578–80.

138. Indeed, Tesla’s pledge led to several public analyses of its patent portfolio, an outcome that had not happened prior to the pledge. See Brian Fung, *How to Build a Tesla, According to Tesla*, WASH. POST (June 23, 2014), <https://www.washingtonpost.com/blogs/the-switch/wp/2014/06/23/how-to-build-a-tesla-according-to-tesla> [<http://perma.cc/HBR4-GC8J>].

139. See *supra* note 134 and accompanying text.

140. Ouellette, *supra* note 19, at 561–65 (analyzing previous surveys, as well as conducting an original survey on nanotechnology researchers, in coming to the conclusion that many parties do, in fact, rely on patented information in their innovative activities).

141. Holbrook, *supra* note 18, at 146 (concluding that patents are “ineffectual teachers” of technical information).

a necessary sacrifice, becomes a key benefit to inventors and the public alike in the informational account of patents.

Part IV below now examines specific examples of patent pledges in order to (1) more clearly highlight the informational value that parties may derive from patents, and (2) set the stage for Part V's examination of recent Supreme Court decisions and their likely informational impacts.

IV. THE RISE OF PATENT PLEDGES

Patent pledges are an increasingly important part of the patent landscape.¹⁴² Forms of patent pledging have existed for some time. For instance, in the standard setting context, parties have agreed to “FRAND” licensing commitments for decades.¹⁴³ But in recent years the types and frequency of pledges have grown, so much so that scholars have increasingly devoted attention to tracking and analyzing their various permutations.¹⁴⁴

This Part builds on the theoretical discussion of Part II and Part III by arguing that the patent pledging phenomenon is a manifestation of patents being used as informational tools. In other words, patent pledgers appear to use patents to efficiently and credibly signal information to product, labor, and capital markets about their innovation activities and goals. Transmission of this information may then facilitate a variety of economic purposes, depending on the pledge. Thus, through their private ordering efforts, patent pledgers increasingly manifest that patents have informational value beyond what typical accounts of the patent system posit. And this value has implications for patent law and policy more generally, as Part VI *infra* will more fully argue.

In support of these arguments, the following sections examine several recent patent pledges made by different innovators. It is beyond the scope of this Article to examine in detail all patent pledges, something others have in part attempted.¹⁴⁵ But the informational themes identified in the representative examples discussed below can help explain patent pledging scenarios in general.

142. Contreras, *supra* note 4 (examining this growing phenomenon in detail).

143. See generally Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889 (2002) (providing an early analysis of this form of patent pledging).

144. Contreras, *supra* note 4.

145. *Id.*; see Program on Info. Justice, *supra* note 3 (cataloguing the known existing non-SDO patent pledges).

A. TESLA

As mentioned in the Introduction, in June 2014 Tesla's CEO, Elon Musk, indicated on the company's blog that "Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology."¹⁴⁶ Musk went on to provide several reasons behind this surprising move. According to the post, Tesla was "created to accelerate the advent of sustainable transport."¹⁴⁷ Yet, Musk admits, Tesla is unable to address the "carbon crisis" on its own because it is unable to produce enough electronic cars fast enough.¹⁴⁸ Annual new vehicle production is nearly 100 million per year, and approximately 2 billion cars are on the road today.¹⁴⁹ According to Musk, Tesla simply cannot satisfy such demand with electronic car options, especially as most major car manufacturers continue to flood the market with carbon-emitting vehicles instead.¹⁵⁰ Thus, Musk and Tesla, in the spirit of the open source software movement, argue that collaboration is the key to making electronic car technology a greater success than it already is.¹⁵¹ And to that end, the company publicly pledged its patents in support thereof.¹⁵²

Tesla's use of its patents as part of its pledge manifests the informational value of Tesla's patents in a number of ways. First, the exclusive rights that come with patents played a key informational role for both Tesla and the public. For instance, without patents, Tesla merely announcing a general desire to collaborate, while perhaps praiseworthy, is not particularly noteworthy. Parties look to collaborate with third parties all the time.¹⁵³ But without more, little if any fanfare will accompany such intentions, even if a company publicly announces them.¹⁵⁴ Of course, once a collaborative effort between parties is formed, such a collaboration may generate significant press, depending on the parties, products, and

146. Musk, *supra* note 1.

147. *Id.*

148. *Id.*

149. *Id.*

150. *Id.*

151. *Id.*

152. *Id.*

153. See Gary Hamel, Yves Doz & C.K. Prahalad, *Collaborate with Your Competitors—and Win*, HARV. BUS. REV., Jan–Feb. 1989, at 133 (discussing the advantages of competitive collaboration).

154. Indeed, it is difficult to even find examples of such scenarios, most likely because engaging in this type of behavior seems to present few if any advantages. And this is so despite the fact that collaboration between companies has long been a key competitive advantage. See *id.*

dynamics involved.¹⁵⁵ But a mere desire to collaborate, even if publicly announced, is hardly newsworthy.

Yet Tesla's announcement immediately made headlines and continues to do so, despite constituting essentially a publicly announced wish with no concrete collaborations in place.¹⁵⁶ Why? Because Tesla publicly disavowed its intention to exercise economically valuable rights associated with its patents.¹⁵⁷ With rights of exclusion in place, for instance, Musk's purported sacrifice of those rights lends Tesla's collaborative intentions greater significance and credibility.¹⁵⁸ After all, if Tesla is sincere about sacrificing those economically valuable rights in pursuit of collaborative efforts—and the evidence¹⁵⁹ and pledge itself¹⁶⁰ suggests that it is—then it seems logical to conclude that the company must genuinely wish to collaborate with third parties in the electronic vehicle industry.¹⁶¹ Indeed, as discussed above, signals are generally more credible if the signaler incurs costs in making the signal, since these costs enable recipients to infer certain characteristics about the signaler.¹⁶² These conditions seem satisfied with Tesla's pledge.

Hence, in Tesla's case, this reasoning suggests that the credibility of Tesla's signal was quite high. After all, though Tesla is a relatively new company, the company already boasts a significant patent portfolio with

155. See, e.g., Laura Entis, *Target to Collaborate With Top Pinterest Users on Party Collections*, ENTREPRENEUR (Feb. 11, 2014), <http://www.entrepreneur.com/article/231432> [<http://perma.cc/W5HH-KGRB>].

156. Ryan Davis, *Devil's In the Details of Tesla's Open Patent Pledge*, LAW360 (June 13, 2014), <http://www.law360.com/articles/547910/devil-s-in-the-details-of-tesla-s-open-patent-pledge> [<https://perma.cc/9SJ2-NTDN>] (providing one of countless immediate analyses of Musk's announcement); Mike Masnick, *Elon Musk Clarifies That Tesla's Patents Really Are Free; Investor Absolutely Freaks Out*, TECHDIRT (Feb. 18, 2015), <https://www.techdirt.com/articles/20150217/06182930052/elon-musk-clarifies-that-teslas-patents-really-are-free-investor-absolutely-freaks-out.shtml> [<https://perma.cc/G5ZL-EBKB>] (providing a more recent analysis of the pledge relating to an investor group's argument that Tesla investors should be worried).

157. Mike Masnick, *Elon Musk Destroys the Rationale for Patents, Opens Up All of Tesla's*, TECHDIRT (June 12, 2014), <https://www.techdirt.com/articles/20140612/11253427557/elon-musk-destroys-rationale-patents-opens-up-all-teslas.shtml> [<https://perma.cc/A99J-D2H8>] (lauding Tesla for pledging all of its patents, rather than some subset thereof, and contrasting Tesla's approach with that of most other companies, which continue to rely on patents in ways that, according to the author, hurt innovation).

158. See *id.*

159. Masnick, *supra* note 156 (detailing Musk reasserting that anyone is free to use Tesla's patents).

160. Musk, *supra* note 1.

161. Masnick, *supra* note 156.

162. See *supra* Part III.

worldwide coverage.¹⁶³ And Musk's pledge covers all of them.¹⁶⁴ Thus, rather than carefully pledging a few trivial patents, Tesla implicated its entire portfolio with its pledge, which helped underscore the seriousness of Tesla's message of collaboration.¹⁶⁵ This sacrifice may have also aided outsiders in inferring characteristics about the company that may be otherwise difficult to observe, such as a certain type of company culture that may be attractive to potential employees, collaborators, and investors. The rights of exclusion that come with a patent thus greatly enhanced Tesla's ability to use its patents as a tool for communicating its innovation preferences to product, labor, and capital markets, even if its approach caused concern in some corners of the capital market.¹⁶⁶

Patent law's disclosure requirements also facilitated Tesla's collaboration signal. For instance, the patent system in general provides a ready means by which to signal information, and the information disclosed in Tesla's patents provides a means by which third parties can assess Tesla's technology for purposes of possible collaboration and use.¹⁶⁷ Indeed, following Tesla's announcement, some parties have performed such assessments.¹⁶⁸

Without patents in place, on the other hand, it would be more difficult for third parties to make such assessments, even with some sort of "patent-less" pledge, for a number of reasons.¹⁶⁹ First, while third parties could simply inspect Tesla's commercially available products in order to better understand the company's technology, a number of factors make such inspections less effective at yielding the same type and quality of information that a patent provides.¹⁷⁰ For instance, patent law includes no requirement that an invention must be commercialized,¹⁷¹ and some

163. Fung, *supra* note 138.

164. See Mike Lloyd, *How Good Are the Tesla Patents? Who Might Want a Free License?* AMBERBLOG (July 24, 2014) <http://www.ambercite.com/index.php/amberblog/entry/how-good-are-the-tesla-patents-who-might-want-a-free-license> [<http://perma.cc/UMY5-QX4X>].

165. See Musk, *supra* note 1.

166. Masnick, *supra* note 156 (providing an account of one such investor group). Of course, the fact that some parties are concerned about Tesla's pledge and its effects on investors is simply another indicator of the pledge's credibility.

167. Fung, *supra* note 138 (detailing an analysis of Tesla's patent portfolio, which followed Tesla's patent pledge); Lloyd, *supra* note 164 (same).

168. See Fung, *supra* note 138.

169. *But see generally* Bar-Gill & Parchomovsky, *supra* note 125 (detailing how parties sometimes simply publish information relating to their innovations, rather than seeking a patent on them, based on certain economic motives).

170. Fromer, *supra* note 19, at 557–58.

171. *Id.*

evidence suggests that most patented inventions are not, in fact, ever put into commercial use.¹⁷² In some industries, even those patented inventions that do find their way into commercial products typically do so long after a patent has been published.¹⁷³ And finally, patentees often make commercially available products difficult to reverse-engineer, thereby making attempts to glean information about a patented invention prohibitively expensive in many cases.¹⁷⁴

Hence, patent law's enablement and written description requirements, combined with patent law's early publication requirement, mean that in many cases Tesla's patents provide technological insights that go beyond what simply inspecting the vehicles would yield.¹⁷⁵ Indeed, patents often disclose technical information that has not yet been commercialized (or which may never be commercialized by the inventor), which means that many aspects of Tesla's patented technology would not be available through inspecting commercially available products.¹⁷⁶ And even in cases where a skilled artisan could eventually obtain much of the same information through inspection that is provided in the patent, patent law's disclosure requirements speed up the process for obtaining such information.¹⁷⁷

Of course, patents are certainly not the only means by which to publicly share technical information relating to Tesla's inventions.¹⁷⁸ Absent patents, Tesla could have devised some other means to collect and systematically document its technical accomplishments.¹⁷⁹ And perhaps in some ways such a system could improve upon what the patent system offers in terms of informational value, to both the public and the patent holder;¹⁸⁰ after all, complaints abound about the low informational value of the patent system.¹⁸¹

But despite these possible advantages, the patent system offers several key benefits in comparison to a possible homegrown solution, as

172. Kurt M. Saunders, *Patent Nonuse and the Role of Public Interest as a Deterrent to Technology Suppression*, 15 HARV. J.L. & TECH. 389, 391 n.10 (2002).

173. Note, *supra* note 33, at 2016.

174. *Id.* at 2017.

175. See Fromer, *supra* note 19, at 557–58.

176. See *id.*

177. *Id.*

178. See generally Bar-Gill & Parchomovsky, *supra* note 125 (detailing how parties sometimes simply publish information relating to their innovations, rather than seeking a patent on them, based on certain economic rationales).

179. See *id.*

180. See *id.*

181. See sources cited *supra* note 33 and accompanying text.

mentioned above. First and foremost, the patent system already exists as a systematic way to publicly document technical accomplishments.¹⁸² Without relying on the patent system, for instance, Tesla may have to invest significant time and resources in building a systematic means for documenting and publishing its technical achievements.¹⁸³ And without the vetting that occurs as part of the patenting process, third parties would have to simply take Tesla at its word as to whether the documented technologies actually represent significant technical accomplishments worthy of their consideration.¹⁸⁴ Without that vetting process in place, therefore, the signal in general may thus become less credible.

Third parties may also have to learn to navigate and understand the homegrown documentation, whereas in most cases they are already familiar with patent documents, despite their potential ambiguities.¹⁸⁵ Last but importantly, as discussed above, exclusive rights that come with a patent can also facilitate the informational purposes of parties.¹⁸⁶ In other words, the patent system's information disclosure requirements present significant informational advantages over a homegrown solution, particularly when combining these advantages with the informational potencies of exclusive rights.

Patents thus aided Tesla in signaling information to several distinct markets. One obvious target is other car manufacturers, that is, the product market.¹⁸⁷ In other words, Tesla seems to have clearly intended to signal to other car manufacturers and innovators its innovation preferences

182. Ouellette, *supra* note 19, at 542 n.61 (noting that the patent system is well-entrenched and required to remain so based on international law obligations that the United States has taken upon itself); BURRONE & JAIYA, *supra* note 122 (estimating that around 70% of the world's technical information is contained in patents and is not published elsewhere).

183. This is not an insurmountable hurdle, as parties publish technical information absent patents all the time. *See, e.g.*, DEFENSIVE PUBLICATIONS, <http://www.defensivepublications.org> [<http://perma.cc/7QXU-XUQQ>] (providing tools and forms for publishing technical information in order to help prevent patents from issuing on prior art technical accomplishments). Nonetheless, the patent system remains a more entrenched, understood, and systematic means of doing so.

184. Sean Tu, *Luck/Unluck of the Draw: An Empirical Study of Examiner Allowance Rates*, 2012 STAN. TECH. L. REV. 10, 12–17 (2012) (reviewing the patent examination process).

185. Lemley, *supra* note 21, at 746–47 (noting the opaqueness of many patents).

186. *See supra* Section III.B.

187. Musk, *supra* note 1 (“We believe that Tesla, *other companies making electric cars*, and the world would all benefit from a common, rapidly-evolving technology platform.” (emphasis added)).

and activities, and to encourage such parties to adopt a similar approach to innovation within the electronic vehicle industry.¹⁸⁸

Tesla also appears to have intended to signal information to the labor market.¹⁸⁹ Indeed, a collaborative approach to innovation may signal an open and collaborative company culture, which may be attractive to many potential employees.¹⁹⁰ In the software industry, for example, the norms of the free and open source software movement have become so entrenched that a company's commitment to that movement often proves to be a useful recruiting tool.¹⁹¹

Last, Tesla's pledge also may have signaled important information to capital markets. While some investors decried Tesla's move because it appeared to sacrifice Tesla's economic rights in exchange for little,¹⁹² others lauded it as economically advantageous.¹⁹³ Although Tesla's pledge thus carries some risk that the economic benefits the company derives from the informational value of its patents will fall short of the direct economic benefits that it sacrificed, Tesla placed its bet on collaborative innovation. And its patents played a significant role in communicating that bet to each of product, labor, and capital markets.

Thus, the potential informational benefits of patents manifest in the Tesla example turn on their head many of the primary informational concerns that scholars have expressed about patents in general. For instance, as mentioned, some studies show that very few parties rely on

188. *Id.*

189. *Id.* ("Technology leadership is not defined by patents, which history has repeatedly shown to be small protection indeed against a determined competitor, but rather by the ability of a company to attract and motivate the world's most talented engineers. We believe that applying the open source philosophy to our patents will strengthen rather than diminish Tesla's position in this regard.")

190. Orly Lobel, *Why Noncompetes May Give You the Least Desirable Employees*, WALL ST. J. (Jan. 22, 2014), <http://blogs.wsj.com/accelerators/2014/01/22/orly-lobel-why-non-competes-may-give-you-the-least-desirable-employees> [<http://perma.cc/WA82-2Y3J>] (describing how restrictive non-competes may actually disincentivize employees); Musk, *supra* note 1.

191. Matt Asay, *Why Open Source Is Becoming a Big Developer-Recruiting Tool*, READWRITE (Oct. 24, 2014), <http://readwrite.com/2014/10/24/open-source-recruiting-facebook-netflix-twitter> [<http://perma.cc/26BC-D3SG>] (describing how Facebook has used its commitment to free and open source software as a recruiting tool).

192. See Masnick, *supra* note 156.

193. Walter Frick, *What Tesla Knows That Other Patent-Holders Don't*, HARV. BUS. REV. (June 12, 2014), <https://hbr.org/2014/06/what-tesla-knows-that-other-patent-holders-dont> [<https://perma.cc/2TBN-AJRP>] (lauding Tesla's move because it enables competitors to work with it in advancing electronic car technology while also preserving distinct advantages in the form of tacit, uncodified knowledge).

technical information gleaned from patents in pursuing innovation.¹⁹⁴ As others have noted, willful infringement standards under patent law may lead many parties to shield themselves from patents.¹⁹⁵ Others complain that patents too often disclose few useful technical details, and that patents are often purposely crafted ambiguously.¹⁹⁶ When using patents as informational tools, however, many of these concerns lessen. Tesla's competitors, for instance, now have greater incentives to inspect Tesla's patents without fear of that inspection later resulting in a willful infringement allegation. Indeed, the pledge helped pique interest in Tesla's patented technologies and encouraged parties to review the company's patents.¹⁹⁷

Furthermore, Tesla also has greater incentives to include significant technical details in its patents in hopes of encouraging and enabling others to collaborate on electronic vehicle innovation. This is in contrast to what some scholars have argued. For instance, some scholars suggest that when parties wish to encourage collaboration in order to increase the collective pie, they may publish, rather than patent, their inventions in hopes of encouraging others to adopt their technologies and build upon them.¹⁹⁸ A patent, according to these scholars, is less conducive to such purposes because of the presence of exclusive rights.¹⁹⁹

But as this Article has argued, patents, coupled with a pledge, may be even more useful with such economic motives in mind because of the informational potencies of exclusive rights discussed above. Indeed, since patents can also be used to effectively disclose technical information (and may even be more advantageous than an unpatented alternative), the advantages of patents in these regards seem even more pronounced. Some of the aforementioned informational concerns will certainly persist in the patent pledging context. For instance, the imperfect nature of language means that patent disclosures and claims will always lack perfect precision. And third parties may still avoid even pledged patents due to concerns about willful infringement, particularly if the patent pledge is largely about signaling enduring exclusionary purposes. Nonetheless, using patents for informational purposes generally means that the informational value of patents is more apparent and in many cases easier to harness.

194. *See supra* notes 133–136 and accompanying text.

195. *Id.*

196. *See id.*

197. *See* Fung, *supra* note 138; Lloyd, *supra* note 164.

198. *See* Bar-Gill & Parchomovsky, *supra* note 125.

199. *See id.*

B. MICROSOFT

Microsoft has frequently been maligned as the enemy of open innovation in the software world, particularly because of the widespread perception that the company maintains an aggressive patent attitude towards users of free and open source software.²⁰⁰ Indeed, at one time top executives at the company infamously referred to the free and open source software movement as a “cancer”²⁰¹ and akin to “communism.”²⁰²

Yet in the last several years, Microsoft has changed its stance.²⁰³ The company has come to provide open support to the free and open source software movement.²⁰⁴ In recent years, for instance, it has been a significant contributor to the Linux kernel project, the famous open source software operating system that helps power much of the computing world today. Microsoft has offered this support despite owning significant numbers of patents relating to Linux.²⁰⁵ It has also established an open

200. See, e.g., Cade Metz, *Meet Bill Gates, The Man Who Changed Open Source Software*, WIRED (Jan. 30, 2012), <http://www.wired.com/2012/01/meet-bill-gates> [<http://perma.cc/JRS6-VVRE>] (describing some of this cantankerous history as well as Microsoft’s softening towards FOSS in recent years).

201. Thomas C. Greene, *Ballmer: “Linux Is a Cancer”*, THE REGISTER (June 2, 2001), http://www.theregister.co.uk/2001/06/02/ballmer_linux_is_a_cancer [<http://perma.cc/S8YV-N8VW>].

202. Graham Lea, *MS’ Ballmer: Linux Is Communism*, THE REGISTER (Jul. 31, 2000), http://www.theregister.co.uk/2000/07/31/ms_ballmer_linux_is_communism [<http://perma.cc/TA67-3CMU>] (likening Linux, the most successful FOSS project at the time, to communism).

203. Steven J. Vaughan-Nichols, *Microsoft: The Open-Source Company*, ZDNET (Jan. 26, 2015), <http://www.zdnet.com/article/microsoft-the-open-source-company> [<http://perma.cc/8BKB-VF46>] (describing Microsoft’s relative embrace of open source software).

204. See, e.g., Maria Deutscher, *Microsoft’s Open-Source Makeover a Developer-Only Campaign—So Far*, SILICON ANGLE (Mar. 23, 2015), <http://siliconangle.com/blog/2015/03/23/microsofts-open-source-makeover-a-developer-only-campaign-so-far> [<http://perma.cc/45HM-UBK3>] (describing recent changes at Microsoft aimed at more fully embracing open innovation); Pinsent Masons, *Microsoft Patent Pledge ‘Worse Than Useless,’ Say Open Source Lawyers*, OUT-LAW.COM (Nov. 15, 2006), <http://www.out-law.com/page-7480> [<http://perma.cc/YT53-A64H>] (describing a deal in which Microsoft would work with Novell in making Windows more compatible with Linux); Microsoft, *Openness*, MICROSOFT OPENNESS BLOG, <http://openness.microsoft.com/blog> [<http://perma.cc/S4JJ-4ZAW>] (describing Microsoft’s approach to and adoption of open innovation).

205. Todd Bishop, *Surprise: Microsoft Makes List of Top 20 Linux Kernel Contributors—First Time Ever*, GEEKWIRE (Apr. 3, 2012), <http://www.geekwire.com/2012/surprise-microsoft-list-top-linux-kernel-contributors> [<http://perma.cc/533W-YNVB>]; Steven J. Vaughan-Nichols, *While You Shouldn’t Expect Windows to Be Open-Sourced in Your Lifetime, Microsoft—Yes, Microsoft—Is the Fifth Largest Code Contributor to Linux 3.0*, ZDNET (July 17, 2011), <http://www.zdnet.com/article/top-five-linux-contributor-microsoft> [<http://perma.cc/A5JX-CQKV>].

source software foundation aimed at providing support to open source software projects.²⁰⁶ It has also released a growing number of technologies under permissive open source software licensing terms.²⁰⁷

In the same vein, starting in 2006 Microsoft began pledging not to sue open source software developers who create, use, and distribute non-commercial software.²⁰⁸ Since then, Microsoft has made a variety of other patent pledges and promises relating to certain of its technologies and open source software users and developers.²⁰⁹ Many of these programs explicitly aim at encouraging interoperability between Microsoft products and those of third parties.²¹⁰ In other words, Microsoft makes some of its technologies more readily available through its interoperability programs and patent pledges in order to encourage third parties to develop technologies that complement its own products.²¹¹

206. Kelly Fiveash, *MS-Backed CodePlex Foundation Morphs into Outercurve*, THE REGISTER (Sept. 28, 2010), http://www.theregister.co.uk/2010/09/28/codeplex_outercurve_microsoft [<http://perma.cc/V67C-32HU>].

207. Neil McAllister, *Microsoft in OPEN-SOURCE .Net Love-In with New Foundation*, THE REGISTER (Apr. 4, 2014), http://www.theregister.co.uk/2014/04/04/microsoft_launches_open_source_net_lovein_with_new_foundation [<http://perma.cc/V67C-32HU>] (describing Microsoft's surprising move of releasing some of its core technologies under permissive FOSS licenses).

208. MICROSOFT, THE MICROSOFT PATENT PLEDGES FOR IMPLEMENTATIONS OF MICROSOFT COMMUNICATIONS PROTOCOL PROGRAM TECHNICAL SPECIFICATIONS, <https://msdn.microsoft.com/en-us/openspecifications/dn865017> [<https://perma.cc/XL7E-NQ6H>]; Program on Info. Justice, *supra* note 3; see Matthew Broersma, *Promise from Microsoft Not to Sue over Standards*, ZDNET (Sep. 13, 2006), <http://www.zdnet.com/article/promise-from-microsoft-not-to-sue-over-standards> [<http://perma.cc/45HS-JA4X>] (OSP); Jason Matusow, *Your Input Requested*, MATUSOW'S BLOG (Nov. 11, 2006), <http://blogs.msdn.com/b/jasonmatusow/archive/2006/11/11/your-input-requested.aspx> [<http://perma.cc/4VY5-RW8M>] (describing Microsoft executive's request to the FOSS community for input on how to improve Microsoft's patent pledge to FOSS developers that it issued as part of a Novell-Microsoft business arrangement).

209. See Julie Bort, *Microsoft Legally Promises Not to Sue Open Source Developers*, NETWORK WORLD (Dec. 16, 2009), <http://www.networkworld.com/article/2232861/microsoft-subnet/microsoft-legally-promises-not-to-sue-open-source-developers.html> [<http://perma.cc/XWN7-WGXE>]; Ina Fried, *Microsoft Pledges Not to Sue over Open Source*, CNET (Feb. 21, 2008), <http://www.cnet.com/news/microsoft-pledges-not-to-sue-over-open-source> [<http://perma.cc/SB88-AWQK>].

210. See *Microsoft Interoperability Program (MIP)*, MICROSOFT, <https://msdn.microsoft.com/en-us/openspecifications/dn646762> [<https://perma.cc/6YAN-AQUU>]; *Interoperability Principles Program*, MICROSOFT, <https://msdn.microsoft.com/en-us/openspecifications/dn646764> [<https://perma.cc/V34C-835Q>].

211. Matt Asay, *What if Microsoft Really Did Open-Source Windows?*, INFOWORLD (Apr. 17, 2015), <http://www.infoworld.com/article/2911159/microsoft-windows/what-if-microsoft-really-did-open-source-windows.html> [<http://perma.cc/WK7P-55WA>].

But Microsoft's apparent embrace of open innovation has been accompanied by increased patent monetization efforts.²¹² Indeed, though Microsoft engaged in a fair amount of patent rattling early on with respect to open source software,²¹³ it has been only more recently that the company has actually utilized its vast patent portfolio against commercial users of Android and Linux.²¹⁴ And in some of these cases, the license deals Microsoft has struck have been quite large—one deal alone is said to be worth \$1 billion per year.²¹⁵ Others estimate that Microsoft receives multiple billions of dollars in annual licensing revenues through its patent licensing programs with respect to open source software technologies.²¹⁶

Viewing patents as informational tools helps explain this apparent contradiction between Microsoft's growing openness and expanding patent monetization efforts. For instance, Microsoft's interoperability programs and related patent pledges are carefully circumscribed.²¹⁷ Unlike Tesla, which simply pledged its entire patent portfolio to the public,²¹⁸

(discussing Microsoft's recent possible openness to releasing Windows as FOSS due to the same economic logic).

212. Alan Shimel, *Does Android Make Microsoft More Money Than Windows Mobile?*, NETWORK WORLD (Oct. 24, 2011), <http://www.networkworld.com/article/2220945/opensource-subnet/does-android-make-microsoft-more-money-than-windows-mobile-.html> [<http://perma.cc/CX7Z-4KUT>] (discussing Microsoft's growing patent monetization efforts and successes with respect to Android and Linux technologies).

213. Joel Hruska, *Microsoft: 235 Specific Patent Infringements in Linux*, ARS TECHNICA (May 14, 2007), <http://arstechnica.com/tech-policy/2007/05/microsoft-235-patent-specific-patent-infringements-in-linux> [<http://perma.cc/3DEQ-M362>] (discussing Microsoft's claim that Linux and other open source technologies infringe at least 235 of its patents).

214. Simon Phipps, *Microsoft 'Loves' Linux? Then Stop Attacking Open Source*, INFOWORLD (Oct. 31, 2014), <http://www.infoworld.com/article/2841412/open-source-software/microsoft-attacks-open-source-linux.html> [<http://perma.cc/DUY3-QEAW>] (reviewing this trend).

215. *Id.*

216. Steven J. Vaughan-Nichols, *Biggest Patent Win Ever? Microsoft's Billion Dollar a Year Samsung Deal*, ZDNET (Oct. 5, 2014), <http://www.zdnet.com/article/biggest-patent-win-ever-microsofts-billion-dollar-a-year-samsung-deal> [<http://perma.cc/B7MV-TF9E>] (estimating that Microsoft made \$3.4 billion on Android-related licensing alone).

217. See Martin LaMonica, *Free-Software Lawyers: Don't Trust Microsoft's Open XML Patent Pledge*, CNET (Mar. 13, 2008), <http://www.cnet.com/news/free-software-lawyers-dont-trust-microsofts-open-xml-patent-pledge> [<http://perma.cc/BJ4F-7QBN>] (discussing one group's concerns with limitations in a Microsoft patent pledge relating to its XML technologies); *Programs*, OPEN SPECIFICATIONS DEV CENTER, <https://msdn.microsoft.com/en-us/openspecifications/dn646761> [<https://perma.cc/44WK-2E5C>] (providing an overview of Microsoft's specific patent licensing and pledge programs).

218. Musk, *supra* note 1.

Microsoft limits its pledges to specific Microsoft technologies²¹⁹ and, in some cases, certain types of developers (i.e., non-commercial).²²⁰ In other words, the informational takeaway from Microsoft's patent pledging programs seems clear: if a party uses the delineated technologies and patents in the specific ways described in the pledges, that party has Microsoft's blessing. But everyone else is fair game. Microsoft's lucrative licensing programs relating to Android and Linux technologies give substance to this message.²²¹

As with Tesla, particular features of the patent system aided Microsoft in signaling to the various markets its intentions. Exclusive rights make Microsoft's informational signals to the product market more credible, both its exclusionary gestures as well as its more inclusionary ones.²²² With respect to exclusionary signals, rights of exclusion by their nature carry with them a message of possible exclusion,²²³ and Microsoft implicitly reasserted an exclusionary intent when it carefully assessed its patent portfolio and specifically excluded many of its patents from its interoperability programs.²²⁴ Indeed, exclusion from such a program, which undoubtedly underwent significant internal review and deliberation, may actually mean that such rights are more likely to be asserted in the future, since such internal deliberations seem to have identified them as important to leave outside of the interoperability programs and associated pledges.²²⁵ The rise of Microsoft's patent monetization efforts following

219. *Microsoft Community Promise*, OPEN SPECIFICATIONS DEV CENTER, <https://msdn.microsoft.com/en-us/openspecifications/dn646766> [<http://perma.cc/4P78-52SS>] (listing specific technological specifications to which the company's "Community Promise" relating to patent non-assertion applies).

220. *The Microsoft Patent Pledges for Implementations of Microsoft Communications Protocol Program Technical Specifications*, OPEN SPECIFICATIONS DEV CENTER, <https://msdn.microsoft.com/en-us/openspecifications/dn865017> [<http://perma.cc/D6NK-C8LK>] (providing a patent non-assertion pledge with respect to open source software developers).

221. See Vaughan-Nichols, *supra* note 216.

222. See *supra* Section III.B.

223. See Lorelei Ritchie, *Reconciling Contract Doctrine with Intellectual Property Law: An Interdisciplinary Solution*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 105, 118 (noting the exclusionary nature of patents).

224. See *Microsoft Community Promise*, *supra* note 219.

225. Indeed, the fact that Microsoft's increased patent monetization efforts seem to have followed some of its early pledges provides some confirmation to this, as forecast by some. See Peter Judge, *Microsoft Opens Up: Everything You Need to Know*, ZDNET (Feb. 24, 2008), <http://www.zdnet.com/article/microsoft-opens-up-everything-you-need-to-know> [<http://perma.cc/K8WS-WEUQ>] ("Interoperability that is safe only for non-commercial software excludes Microsoft's number one competitor, Linux. . . . So, right there it tells you that this is a promise to do nothing that matters.").

such deliberations appears to provide some confirmation of this intuition.²²⁶

Conversely, the patents and associated technologies that were included in such programs helped bolster the credibility of Microsoft's message of partial openness.²²⁷ After all, if Microsoft were not serious about this partial openness, why would it sacrifice its exclusive rights, which it chose not to do in so many other cases?²²⁸ This is not to say that more generous pledges, such as Tesla's, are less in earnest. But it is to say that the circumscribed nature of Microsoft's pledge indicates some amount of deliberation, which in turn may function as a proxy for credibility.

It is true that antitrust concerns may have in part motivated Microsoft's move towards more openness, since the pledges may have helped satisfy the relevant government authorities that the company was moving away from certain anti-competitive behaviors.²²⁹ But antitrust concerns certainly do not provide a complete explanation. Indeed, as others have noted, Microsoft seems to have begun to realize what other companies have known for some time: openness can yield significant economic returns that exceed a more proprietary approach, particularly where significant economic value lies not in the ceded technologies, but in complementary goods and services to them.²³⁰ Of course, the simplest way to signal openness may be to never pursue rights of exclusion in the first place.²³¹ But in a world of rapid technological change and strategy, obtaining a patent may be a safer approach since it allows the patent owner to signal exclusion or inclusion (or a mix of both).²³² Furthermore, as discussed above, sacrificing rights of exclusion lends greater credence to the signal, as well as enabling recipients thereof to potentially infer information about Microsoft that may be otherwise difficult to verify.²³³

The information disclosures that are part of the patenting process also facilitated Microsoft's signals of both exclusion and inclusion. Microsoft,

226. See Vaughan-Nichols, *supra* note 216.

227. See *supra* Section III.B.

228. See *Microsoft Community Promise*, *supra* note 219.

229. Judge, *supra* note 225 (discussing antitrust actions in the European Union that played a role in pushing Microsoft towards greater openness).

230. Asay, *supra* note 211 (discussing the economic logic of opening up Windows technologies).

231. Bar-Gill & Parchomovsky, *supra* note 125.

232. See generally Stuart J.H. Graham & Ted Sichelman, *Why Do Start-Ups Patent?*, 23 BERKELEY TECH. L.J. 1063 (2008) (discussing the many roles that a patent can play for start-up companies).

233. See *supra* Part III.

for instance, was able to more specifically delineate patents and the associated technologies included in its pledges, as well as those without.²³⁴ Third parties could thus inspect specific patents, their claimed scope, as well as their technical disclosures in assessing Microsoft's vows.²³⁵ While other regimes might also facilitate such informational purposes, the patent regime provides a ready, well-entrenched means by which to realize them.²³⁶

In addition to signaling information to Microsoft's competitors in the product market, it also seems likely that Microsoft sought to signal information to the labor market through its pledges. As mentioned, Microsoft has long been viewed with intense suspicion in certain parts of software developer communities.²³⁷ But good relationships with developer communities are important, both in terms of hiring²³⁸ and employee morale.²³⁹ By purporting to sacrifice some of its valuable patent rights in support of open source software development, Microsoft signaled to developer communities a new kind of Microsoft (at least in some respects).²⁴⁰ Indeed, the company has engaged in a variety of public relations efforts over the years in hopes of improving its public image, particularly within developer communities.²⁴¹ And again, this relatively new company culture may be difficult for outsiders to observe and trust but for the costly signal associated with Microsoft's patent pledge.²⁴²

Last, the pledge also likely signaled information to capital markets. For instance, investors might be more confident in a company adapting to the times than one stubbornly clinging to its past.²⁴³ And sacrificing exclusive rights helped credibly signal to investors that the company was,

234. See *Programs*, *supra* note 217.

235. 35 U.S.C. § 122 (2012) (requiring in most cases that patent applications be published eighteen months after filing or upon issuance of the patent).

236. Ouellette, *supra* note 19, at 556 (noting that the patent system is "entrenched" as part of the international patent system).

237. Metz, *supra* note 200.

238. Asay, *supra* note 191 (detailing Facebook's successes in using open source as a recruiting tool).

239. See Lobel, *supra* note 190 (arguing that restrictive clauses in employee agreements can actually decrease employee morale and thus impact future recruiting efforts).

240. Vaughan-Nichols, *supra* note 203.

241. Deutscher, *supra* note 204 (detailing some of these efforts focused on developer communities).

242. See *supra* Section III.A.

243. See, e.g., Leo Sun, *An Open-Source Microsoft Windows? I Don't Think So*, THE MOTLEY FOOL (Apr. 8, 2015), <http://www.fool.com/investing/general/2015/04/08/an-open-source-microsoft-windows-i-dont-think-so.aspx> [<http://perma.cc/JQE7-VWD9>] (providing analysis from an investor website discussing some of Microsoft's moves towards more openness).

in fact, adapting to the times, while also indicating the particular ways it was doing so. In other words, this manifestation of patent restraint pointed to a more collaborative, open company generally. Yet the confined nature of Microsoft's pledges also signaled to capital markets the likelihood of ongoing patent monetization efforts and business as usual, which later patent licensing activities confirmed.²⁴⁴

In sum, Microsoft used patents and its accompanying pledges to signal to product, labor, and capital products a variety of informational messages. One of a patent's key virtues in such scenarios, therefore, is its multi-dimensional nature. In other words, Microsoft is able to simultaneously use its patents and accompanying pledges in support of its patent monetization efforts as well as its more collaborative initiatives. And it is able to do so in significant part because of the informational potencies of patents.

C. TWITTER

Twitter, the social networking service, has also recently joined the patent pledging trend.²⁴⁵ Twitter's patent pledge is in form and substance distinct from the other pledges already discussed. Twitter, like Tesla, introduced its patent pledge on the company's blog.²⁴⁶ The essence of Twitter's "Innovator's Patent Agreement" (IPA) is that the company agrees not to offensively assert its patents against third parties unless the employees responsible for developing the patented technology give the company permission to do so.²⁴⁷ And this employee control persists even if the patent is sold to a third party.²⁴⁸ Twitter thus explicitly curtailed its ability to assert its patents against third parties, though the company retained the right to assert its patents defensively against those that attack it first.²⁴⁹ Hence, though the IPA is not an outright abandonment of Twitter's patent rights, it significantly handicapped the company in using its patents in traditionally exclusionary ways.

244. See Vaughan-Nichols, *supra* note 216.

245. See Adam Messinger, *Introducing the Innovator's Patent Agreement*, TWITTER BLOGS (Apr. 17, 2012), <https://blog.twitter.com/2012/introducing-innovators-patent-agreement> [<http://perma.cc/VB4G-5N3S>].

246. *Id.*

247. *Id.*

248. *Id.*

249. William Carleton, *Reality Check: Twitter's Patent Pledge Not What It Seems*, GEEKWIRE (Apr. 18, 2012), <http://www.geekwire.com/2012/reality-check-twitters-patent-pledge-not-what-it-seems> [<http://perma.cc/DM35-MZCL>] (discussing some of the limitations of Twitter's patent pledge).

As with the other pledges already reviewed, the exclusive rights that come with a patent played a key role in facilitating Twitter's informational purposes in making the pledge. For instance, the company explicitly expressed hope that other technology companies would join it in similarly curtailing their own patent rights in order to foster an environment of innovation rather than litigation.²⁵⁰ But this message might have rung rather hollow if Twitter did not own exclusive rights in the first place.²⁵¹ In other words, asking other parties to give up their economic rights while doing the same is one thing. Making such a request of third parties, without undertaking the same sacrifices, is quite another. At the time of the pledge, Twitter owned very few patents outright,²⁵² though, as others have noted, the company even then was in the process of acquiring significant numbers of patents.²⁵³ Indeed, the company has recently significantly bolstered its portfolio, thereby augmenting its message, since the IPA applies to those patents as well.²⁵⁴ Exclusive rights thus helped Twitter communicate its activities and goals to third parties, and put the company in a better position to foster those preferences more generally.²⁵⁵

Patent law's information disclosure requirements also aided Twitter in using its patents as an informational tool, since third parties could look to Twitter's patents and accompanying disclosures to assess the magnitude and credibility of its commitment.²⁵⁶ While patent disclosures are far from

250. Messinger, *supra* note 245 ("We . . . have just started to reach out to other companies to discuss the IPA and whether it might make sense for them too.").

251. *See supra* Part III.

252. George Anders, *Twitter's Odd Patent Portfolio: No Sign of 140-Character Gold*, FORBES (Sept. 14, 2013), <http://www.forbes.com/sites/georgeanders/2013/09/14/twitters-slim-patent-portfolio-lacks-any-140-character-gold> [<http://perma.cc/SH63-VRKL>] (discussing the relative smallness of Twitter's patent portfolio a year after the IPA was pledged).

253. Gene Quinn, *Patents are Important: Bursting the Twitter Patent Mythology*, IPWATCHDOG (Sept. 29, 2014), <http://www.ipwatchdog.com/2014/09/29/patents-are-important-bursting-the-twitter-patent-mythology> [<http://perma.cc/U6M8-WBZ3>] (indicating that Twitter has been active in pursuing patent applications since its founding).

254. Jacqueline Sahagian, *Twitter Fleshes Out Its Patent Portfolio*, THE CHEAT SHEET (Jan. 31, 2014), <http://www.cheatsheet.com/technology/twitter-fleshes-out-its-patent-portfolio.html> [<http://perma.cc/32HL-KCWA>] (detailing Twitter's acquisition of over 900 patents from IBM).

255. Kal Raustiala & Chris Sprigman, *The Twitter I.P.A.*, FREAKONOMICS (May 3, 2012), <http://www.freakonomics.com/2012/05/03/the-twitter-i-p-a> [<http://perma.cc/5S4K-9RN5>] (describing the IPA as a form of "norms entrepreneurship").

256. *See* Anders, *supra* note 252 (analyzing Twitter's patent portfolio and noting its paucity, especially with respect to technologies key to the Twitter service); Quinn, *supra*

perfect, they nonetheless provide third parties a significant amount of technical information that those parties can then take into account in assessing Twitter's (and others') pledge.²⁵⁷ It is true that reviewing patent documents will not reveal the intentions of the inventors themselves, which may lessen the credibility of Twitter's signal since some of the relevant inventors may be more than willing to allow the company to use their patents offensively. Nevertheless, the self-imposed restrictions still evince significant sacrifice, particularly when considering that no other companies have adopted a similar policy of self-restraint. These restrictions thus signal some credibility, even if the sacrifice could have been more far-reaching.

Other aspects of patent law's disclosure requirements also likely proved helpful to Twitter in using its pledge as a sales pitch to the labor market. For example, patent law requires patent applicants to list the specific inventors that developed the patented technology.²⁵⁸ This means that, although most patents ultimately belong to companies, the actual inventors listed on any given patent document are typically the employees that invented the patented technology.²⁵⁹ The employer is then normally listed on the patent document as the assignee of the employee's rights in the inventions, since most companies require their employees to assign their rights to anything that the employees invent while with the company.²⁶⁰

Traditionally, employee inventors thus have little say in what happens to their inventions after they assign ownership rights to the company.²⁶¹ But Twitter went to great lengths in its blog post to make clear that the company believes that its employees deserve better, and that Twitter, with its pledge, will do better by whomever the company employs.²⁶² In addition to empowering its current employees, the pledge may thus also serve as an important tool for recruiting potential employees. This may be particularly so since most companies are routinely taking the opposite

note 253 (analyzing Twitter's patent portfolio and concluding that the company has obtained several patents relating to key technologies, contrary to popular belief).

257. BURRONE & JAIYA, *supra* note 122 (indicating that the vast majority of the world's technical information is contained in patents and is not published elsewhere).

258. 35 U.S.C. § 115 (2012).

259. Michael Risch, *Patent Portfolios as Securities*, 63 DUKE L.J. 89, 99 (2013).

260. *Id.*

261. *See generally* ORLY LOBEL, TALENT WANTS TO BE FREE: WHY WE SHOULD LEARN TO LOVE LEAKS, RAIDS, AND FREE RIDING (2013) (detailing the many ways in which employers assert rights in the intellectual contributions of their employees).

262. Messinger, *supra* note 245.

approach to employer-employee relationships in terms of intellectual asset ownership.²⁶³

Without a patent document listing the inventors and describing their technical contributions, it is more difficult to imagine exactly how Twitter would have conveyed and brought to pass its message of employee empowerment. This is not to say that Twitter could not have devised some other means of doing so. But it is to say that patents and their accompanying information disclosures provided the company with a ready means for delivering its message. A patent's exclusive rights also helped bolster Twitter's purpose in this respect, since returning in part the exclusive rights that come with a patent back to the employee is a powerful informational signal in its own right.²⁶⁴ Indeed, that signal may allow recipients thereof to infer characteristics of the company that are otherwise difficult to confirm, such as an attractive, employee-first environment.²⁶⁵

These same labor market signals might have also been intended for capital markets. For instance, investors may look favorably upon Twitter's attempt to improve employee morale by empowering its employees through the patent pledge, since plenty of evidence suggests that companies benefit significantly when employees are happy.²⁶⁶ And the innovation preferences and activities that the pledge signals may also prove attractive to investors generally,²⁶⁷ though some may take the opposite view.²⁶⁸ But patents played a key role in helping Twitter communicate information to each of product, labor, and capital markets, regardless of how those markets ultimately respond to such signals.

263. See LOBEL, *supra* note 261.

264. See Joe Brockmeier, *Why Every Company Should Adopt Twitter's Innovator's Patent Agreement*, READWRITE (Apr. 17, 2012), <http://readwrite.com/2012/04/17/why-every-company-should-adopt> [<http://perma.cc/7SSU-8MZJ>] (listing the many recruiting advantages that an agreement such as the IPA gives a company, and arguing that other companies should follow Twitter's lead).

265. See *supra* Part III.

266. Meghan M. Biro, *Happy Employees = Hefty Profits*, FORBES (Jan. 19, 2014), <http://www.forbes.com/sites/meghanbiro/2014/01/19/happy-employees-hefty-profits> [<http://perma.cc/X26B-4S2K>].

267. See Jeff Roberts, *Why Twitter's Patent Policy Is an Asset, Not a Problem*, GIGAOM (Oct. 21, 2013), <https://gigaom.com/2013/10/21/why-twitters-patent-policy-is-an-asset-not-a-problem> [<http://perma.cc/DWD6-LET4>] (providing a favorable investor perspective on Twitter's approach to patents).

268. Michael Kanellos, *Twitter's Patently Absurd Patent Policy*, FORBES (Apr. 17, 2012), <http://www.forbes.com/sites/michaelkanellos/2012/04/17/twitters-patently-absurd-patent-policy> [<http://perma.cc/58B4-LF9X>] (expressing cynicism regarding Twitter's patent policy); Leslie Picker, *Twitter's Lack of Patents Seen as a Risk to Investors*, BLOOMBERG (Oct. 17, 2013) (describing Twitter's relative paucity of patents as a risk).

D. IBM

IBM made waves in 2005 when it pledged 500 of its patents to the free and open source software movement.²⁶⁹ As part of this pledge, IBM committed not to assert these specific patents against “any individual, community, or company working on or using software that meets the Open Source Initiative (OSI) definition of open source software.”²⁷⁰ At the time, IBM claimed the pledge was the largest of its kind.²⁷¹

In several respects, IBM’s pledge is different than some of the others discussed above. First, IBM’s pledge targeted a specific type of developer, namely, those that develop, use, and distribute open source software.²⁷² No other party benefits from the pledge.²⁷³ And even parties engaged in open source software development, use, and distribution remain possible targets of IBM’s tens of thousands of non-pledged patents.²⁷⁴

Second and relatedly, the pledge covered 500 specific patents, rather than IBM’s entire patent portfolio.²⁷⁵ While 500 patents may seem like a large number, IBM is regularly granted thousands of patents per year, and has filed for more U.S. patents than any other company for twenty-two straight years.²⁷⁶ Thus, instead of implicating its entire portfolio, IBM

269. See, e.g., Steve Lohr, *I.B.M. to Give Free Access to 500 Patents*, N.Y. TIMES (Jan. 11, 2005), <http://www.nytimes.com/2005/01/11/technology/ibm-to-give-free-access-to-500-patents.html> [<http://perma.cc/GXN2-TYNV>] (discussing IBM’s move as unconventional); Lucy Sherriff, *IBM Pledges 500 Patents to OS Developers*, THE REGISTER (Jan. 11, 2005), http://www.theregister.co.uk/2005/01/11/ibm_patent_donation [<http://perma.cc/8CKQ-EHTZ>]; Cynthia L. Webb, *Big Blue Opens the Patent Vault*, WASH. POST (Jan. 11, 2005), <http://www.washingtonpost.com/wp-dyn/articles/A376-2005Jan11.html> [<http://perma.cc/VQT7-JDJ8>].

270. *IBM Pledges 500 U.S. Patents to Open Source in Support of Innovation and Open Standards*, IBM (Jan. 11, 2005), <https://www-03.ibm.com/press/us/en/pressrelease/7473.wss> [<http://perma.cc/2EYH-LGCT>].

271. *Id.*

272. Wen Wen, Marco Ceccagnoli & Chris Forman, *Opening Up IP Strategy: Implications for Open Source Software Entry by Start-Up Firms*, MANAGEMENT SCIENCE 9 (Articles In Advance, 2015), <http://dx.doi.org/10.1287/mnsc.2015.2247> [<https://perma.cc/8Z44-RSB5>].

273. See *id.*

274. Ann Bednarz, *IBM Retains Patent Crown, Frees 500 Patents for Open Source Use*, NETWORK WORLD (Jan. 11, 2005), <http://www.networkworld.com/article/2328329/software/ibm-retains-patent-crown--frees-500-patents-for-open-source-use.html> [<http://perma.cc/3JEN-ZUJP>] (discussing the disparity between the 500 patents pledged and the ever-growing patent portfolio of the company).

275. *Id.*

276. Clayton Browne, *IBM Filed Most US Patents for 22nd Straight Year*, VALUEWALK (Jan. 12, 2015), <http://www.valuewalk.com/2015/01/ibm-filed-us-patents-22nd-straight-year> [<http://perma.cc/7ZEA-MQEF>].

carefully selected and pledged 500 specific patents relating to operating system and other technologies, where IBM believed that a more open model of innovation presented the company with greater economic prospects than an exclusionary approach.²⁷⁷ Some studies suggest IBM's patent pledge proved successful in encouraging complementary technological innovation to the technological areas that the pledged patents covered.²⁷⁸

How did patents facilitate this economic move? In important respects, they functioned as an informational conduit to third parties. First, by sacrificing a large block of patents and their accompanying exclusive rights, IBM signaled to the product market the seriousness of its altered approach to patent rights.²⁷⁹ Indeed, such a sacrifice may have aided many market participants in inferring certain characteristics of the company, including perceptions of IBM as a willing collaborator, an attractive possible employer, and a company with economic vision worth investing in. By the same token, the circumscribed nature of the pledge, in light of IBM's tens of thousands of unpledged patents, also signaled that this altered approach did not apply across the board.²⁸⁰ For those tens of thousands of non-pledged patents, IBM signaled that it intended business as usual.²⁸¹ And even for the pledged patents, some commentators later questioned IBM's intentions based on purported violations of the pledge.²⁸²

Patent law's disclosure and claiming requirements aided IBM in achieving these informational objectives. For instance, these requirements, once fulfilled during the patenting process, provided IBM with a ready means by which to pledge with specificity. Indeed, with its 500-patent pledge, the company precisely signaled the areas of technology in which it hoped to encourage complementary innovation, and which areas remained

277. YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 46–47 (2006); *see also* Wen Wen et al., *supra* note 272.

278. *Supra* note 277.

279. Lohr, *supra* note 269 (labeling IBM's approach to patents unconventional and contrasting it with the typically exclusionary approach of most patent holders).

280. Brockmeier, *supra* note 264 (expressing some skepticism about the pledge because of the large number of patents that were left out of it).

281. *Id.*

282. *See, e.g.*, Florian Mueller, *IBM Breaks the Taboo and Betrays Its Promises to the FOSS Community*, FOSS PATENTS (Apr. 6, 2010), <http://www.fosspateints.com/2010/04/ibm-breaks-taboo-and-betrays-its.html> [<http://perma.cc/RJN9-87AC>] (detailing an alleged violation of the pledge).

on the outside.²⁸³ And patent law's disclosure and claiming requirements provided the company with a systematic, well-documented means of providing those specifics.²⁸⁴

IBM's pledge likely also functioned as an informational signal to capital markets. IBM had long lost ground to Microsoft and others in competitively licensing operating system and related technologies to third parties.²⁸⁵ With its pledge, IBM signaled a shift in focus: rather than attempting to directly monetize operating system and related technologies, the company would focus on generating revenues from complementary products and services while encouraging innovation in these ceded technologies.²⁸⁶ This hoped-for innovation, in turn, would aid IBM in realizing gains from its core revenue-generating products and services.²⁸⁷

Last, the pledge may have also been intended as a recruiting tool, like with the other pledges reviewed above.²⁸⁸ Especially given the sour feelings of many in developer communities vis-à-vis Microsoft,²⁸⁹ siding with open

283. See Jim Wagner, *IBM's Patent Pledge Ripples Open Sourcers*, INTERNETNEWS.COM (Jan. 13, 2005), <http://www.internetnews.com/bus-news/article.php/3458551/IBMs-Patent-Pledge-Ripples-Open-Sourcers.htm> [<http://perma.cc/79TH-D3JD>] (quoting some commentators who believe that IBM pledged some crucial patents for FOSS development, while also quoting other commentators who believe that a significant number of relevant patents remain unpledged).

284. See generally Colleen V. Chien, *Exclusionary and Diffusionary Levers in Patent Law*, S. CAL. L. REV. (forthcoming 2016), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2624692 [<https://perma.cc/JN4A-H8PZ>] (discussing the traditional focus on the exclusionary value of patents, and arguing that patents also have value as tools in diffusing information to the public).

285. Andrew Orłowski, *OS/2 a Quarter Century On: Why IBM Lost Out and How Microsoft Won*, THE REGISTER (Nov. 27, 2012), http://www.theregister.co.uk/2012/11/27/the_os_wars_os2_25years_old [<http://perma.cc/7TZK-3HFD>] (describing in detail how Microsoft's operating system technologies won out over IBM's over time); see also Robert Prentice, *Vaporware: Imaginary High-Tech Products and Real Antitrust Liability in a Post-Chicago World*, 57 OHIO ST. L.J. 1163, 1229 n.270 (1996).

286. Amy L. Landers, *The Antipatent: A Proposal for Startup Immunity*, 93 NEB. L. REV. 950, 992–93 (2015) (suggesting that the pledge was motivated in part to encourage development of the Linux operating system as a viable alternative to Microsoft's Windows technologies); Wen Wen et al., *supra* note 272, at 8.

287. Landers, *supra* note 286; Wen Wen et al., *supra* note 272, at 8.

288. Brockmeier, *supra* note 264.

289. Julie Bort, *Microsoft Exec: If You Hate Microsoft, You Don't Really Know Us*, BUSINESS INSIDER (Feb. 21, 2012), <http://www.businessinsider.com/microsoft-exec-if-you-hate-microsoft-you-dont-really-know-us-2012-2> [<http://perma.cc/LY3N-2ZKR>] (starting the article with the question, in reference to Microsoft, “[h]ow do you convince a generation of people who have grown up thinking you are evil to change their minds and love you instead?”).

source software developers via its pledge may have been a particularly savvy public relations move on the part of IBM at the time.²⁹⁰

In sum, IBM appears to have used its pledge to signal information to capital, labor, and product markets. There was, of course, no guarantee that investors, competitors, or developers would respond favorably to such signals.²⁹¹ Regardless of the efficacy of the signals, however, patents played a critical role in helping convey them.

E. THE PATENT IMPOVERISHED

The above patent pledging examples all concern well-known, larger companies that often boast significant patent portfolios. The question naturally arises, then, what to make of the purported informational value of patents for those possessing few patents. Can and do smaller companies that possess a more limited number of patents realize the same types of informational value from their patents as, say, an IBM or a Tesla?

As discussed briefly above, some accounts suggest that smaller companies realize informational value from patents primarily as a signal to investor communities.²⁹² In other words, start-ups and the like may acquire patents in order to convey to capital markets that they are serious innovators and thus worthy of investment. But the informational values of patents as described in this Article go beyond this narrative, and the question remains whether these smaller patent holders are able to derive these broader types of informational value from their patents.

The short answer is that such informational uses are certainly a possibility for smaller companies, but other considerations may lead them to adopt a different strategy with respect to the few patents that they possess. For instance, smaller companies heavily dependent on investor funding in the early stages of their lifecycles may be more risk-averse to engaging in behavior that may put off investors, which may include patent pledging. In other words, the safer approach may be to acquire patents in hopes of signaling innovativeness to investors, but to do little else with the patents unless investors otherwise advise. Hence, larger companies with significant portfolios appear to have greater leeway in how they use their

290. Scott Merrill, *Is IBM Splitting Hairs with Open Source?*, TECHCRUNCH (Apr. 8, 2010), <http://techcrunch.com/2010/04/08/is-ibm-splitting-hairs-with-open-source> [<http://perma.cc/EW49-BMF8>] (calling IBM's pledge "an obvious PR stunt to get buddy-buddy with the open source community").

291. Wagner, *supra* note 283 (providing a variety of viewpoints in response to IBM's pledge).

292. Long, *supra* note 23.

patents, since their relative stability means that they are not dependent on early-stage investment in the same way that a start-up company may be.

Furthermore, the businesses of larger companies are likely to be more diverse than those of smaller entities and thus demand different patent strategies. Hence, because of this diversification, larger companies with significant patent portfolios may be more likely to utilize patents in ways that yield the types of informational value discussed in this Article. Smaller companies, on the other hand, are more likely to still be seeking their commercial footing, and pledging away patent rights may be a risky behavior in light of that commercial status.

Last, though no absolute reasons bar smaller companies from realizing some of the informational value of patents as described in this Article, their smaller numbers of patents may mean that any signals that they do seek to convey are limited. Put differently, a smaller company that pledges its few patents may send a less significant signal to markets than IBM pledging 500 patents, simply because the sacrifice of the smaller company, in absolute terms, is less. Of course, the opposite conclusion may also be reasonable because, in relative terms, the smaller company may have sacrificed more than IBM, given IBM's tens of thousands of patents. But the uncertainty of how markets will perceive the smaller patent holder's pledge, combined with the uncertainty of how the smaller company's investors may receive its actions, may cumulatively mean that smaller companies with few patents are less likely to engage in patent pledging than the IBMs of the world. Or, even when they do engage in patent pledging, the informational effects of their activities are fewer. The informational value of patents described in this Article may thus largely be a big firm phenomenon, at least for now, even in cases where smaller companies with few patents do engage in patent pledging.²⁹³

V. SCOTUS AND THE INFORMATIONAL ROLE OF PATENTS

Parts II–IV of this Article have provided an informational account of patents. Unlike traditional theories of patent law, which view any possible informational value of patents from the perspective of the public, this Article argues that patents can have informational value to patent owners

293. Indeed, a database of patent pledgers lists a number of smaller pledgers. *See* Program on Info. Justice, *supra* note 3. But the pledges of such parties do not appear to garner the same type of attention as those of larger companies such as Tesla, Microsoft, and others. This all suggests that the size of the company and its numbers of patents do affect what informational value pledgers may derive from use of their patents in this way.

as well. The phenomenon of patent pledging, several examples of which Part IV reviewed, provide evidence in support of this claim.

Part V now turns to recent Supreme Court case law in order to assess what informational impacts these decisions may have. This review is particularly relevant now, as the U.S. Supreme Court has been quite active in the last several years in rendering key patent law decisions.²⁹⁴ While the informational value of patents has not been explicitly considered in these decisions, many of these decisions nonetheless may have significant consequences for patents as informational tools, as the below sections demonstrate. Going forward, this Article argues that courts and Congress should consider the informational value of patents in making decisions regarding patent law, particularly in industries where patent pledging is more common.

A. THE INFORMATIONAL IMPACT OF RECENT PATENTABLE SUBJECT MATTER CASES

The following sections first summarize recent Supreme Court decisions regarding patentable subject matter and then assess what those cases may mean for the informational value of patents.

1. *Patentable Subject Matter at the Supreme Court*

In recent years, the U.S. Supreme Court has spent considerable time assessing what constitutes “patentable subject matter.”²⁹⁵ Section 101 of the Patent Act sets forth the patentable subject matter requirement generally.²⁹⁶ This section indicates that anyone may obtain a patent on an invention so long as that party “invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”²⁹⁷ On its face, § 101 thus lacks express subject matter limitations beyond requiring that the item is within one of the enumerated categories and proves “new and useful.” As others have noted, the categorical limitations do not actually function as significant limitations, since almost anything that a party could patent easily fits

294. Ouellette, *supra* note 37 (noting this trend, and listing all recent Supreme Court cases dealing with patent law).

295. John M. Golden, *Flook Says One Thing, Diehr Says Another: A Need for Housecleaning in the Law of Patentable Subject Matter*, 82 GEO. WASH. L. REV. 1765, 1766–75 (2014) (reviewing this trend and the relevant cases).

296. 35 U.S.C. § 101 (2012).

297. *Id.*

within one of them.²⁹⁸ Indeed, those favoring an expansive view of patentable subject matter often point to language from the legislative history of the 1952 Patent Act, which indicates, in part, that “anything under the sun made by man” is meant to be patentable subject matter.²⁹⁹ The America Invents Act, passed in 2011 and representing the most significant patent law reform since the 1952 Patent Act, did nothing to alter this understanding.³⁰⁰

Yet over time courts have developed a number of exceptions to patentable subject matter that are not explicitly listed in the statute.³⁰¹ These common law exceptions generally preclude a patent that purports to claim a “law of nature,” an “abstract idea,” or “natural phenomena.”³⁰² Though some scholars have questioned the value of these exceptions,³⁰³ others argue that the Supreme Court has made clear that it does not intend to abandon them.³⁰⁴

Indeed, the recent slew of Supreme Court patentable subject matter cases has largely dealt with determining when these exceptions apply. In *Bilski v. Kappos*, for example, the Court held that a patent claiming the concept of risk-hedging as applied to energy markets constituted an abstract idea ineligible for patent protection.³⁰⁵ In *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, the Court reviewed the “law of nature” exception and ultimately held that the patent at issue did not claim patentable subject matter because it attempted to claim a law of nature relating to drug dosages and metabolite levels in the blood.³⁰⁶ And in *Association for Molecular Pathology v. Myriad Genetics, Inc.*, the Court

298. Mark A. Lemley, Michael Risch, Ted Sichelman & R. Polk Wagner, *Life After Bilski*, 63 STAN. L. REV. 1315, 1328 (2011).

299. S. Rep. No. 82-1979, at 5 (1952).

300. See, e.g., Robert A. Armitage, *Understanding the America Invents Act and Its Implications for Patenting*, 40 AIPLA QUART. J. 1 (2012) (failing to mention patentable subject matter even once in over 133 pages of summary of the America Invents Act’s implications).

301. See *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010).

302. *Id.*

303. Michael Risch, *Everything Is Patentable*, 75 TENN. L. REV. 591, 595 (2008) (arguing for jettisoning the patentable subject matter requirement and instead relying on patent law’s other requirements in assessing patentability).

304. Lemley et al., *supra* note 298, at 1326.

305. *Bilski*, 130 S. Ct. at 3229–30.

306. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1297–98 (2012) (holding that method claims requiring the administration of a drug, followed by assessing the metabolite levels in the blood and then adjusting the drug level in order to change the metabolite levels claimed a law of nature and thus did not qualify for patent protection).

addressed the “natural phenomena” or “product of nature” exception, ultimately holding that isolated DNA sequences are not patentable subject matter because the DNA segment occurs in nature (even if not in isolated form).³⁰⁷

Most recently, the Court revisited the “abstract idea” exception in *Alice Corp. Proprietary Ltd. v. CLS Bank International*.³⁰⁸ The Court, building on the earlier patentable subject matter cases mentioned directly above, formalized a two-step approach to assessing whether one of the patentable subject matter exceptions applies.³⁰⁹ First, a court is to assess whether the patent claims are directed to a law of nature, abstract idea, or natural phenomenon.³¹⁰ If so, the court then moves to the second step, which asks whether the patent claims involve an “inventive concept.”³¹¹ In other words, if the patent includes elements or a combination of elements “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon [a law of nature, abstract idea, or natural phenomena],” then the patent claims patentable subject matter.³¹² Otherwise, it does not.³¹³

According to the Court, the patents in question in *Alice* claimed mitigating settlement risk in financial transactions by using a computer system as a third-party intermediary.³¹⁴ The Court determined that this idea of intermediated settlement was an abstract idea not eligible for patent protection, and that requiring computer implementation did not transform this abstract idea into a patent-eligible invention because generic computer implementation did not involve an “inventive concept.”³¹⁵

2. *The Possible Informational Effects of the Alice Decision*

Cumulatively, these patentable subject matter cases have several important possible implications relating to the informational value of patents. First, they may boost the informational value of patents by requiring more detailed disclosures within the patent document in order to

307. *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2111 (2013).

308. *Alice Corp. Proprietary Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

309. *Id.*

310. *Id.*

311. *Id.*

312. *Id.*

313. *Id.*

314. *Id.*

315. *Id.*

avoid the applicability of one of these exceptions. For instance, though some early evidence following *Alice* suggests that very few current business method and software patents are valid when applying *Alice's* standards,³¹⁶ the post-*Alice* cases in which patents have survived the patentable subject matter question indicate that the greater the level of specificity in the patent document, the more likely that the patent claims will survive.³¹⁷ Thus, while cases since *Alice* may not be entirely consistent,³¹⁸ the trend for now indicates that a greater amount of specificity and detail in the patent may save the claims from invalidation.³¹⁹

Hence, this greater level of disclosure and specificity in patent applications may in some respects increase the informational value of patents. For instance, from the public's perspective, more specific and detailed patent disclosures will increase the value of patents by providing clearer notice of the patent's scope as well as greater insight into the technical accomplishments involved.³²⁰ This greater value to the public could, in turn, increase the informational value of patents to patentees that use patents as informational tools. For instance, more specific and detailed

316. Steven Seidenberg, *Business-Method and Software Patents May Go Through the Looking Glass After Alice Decision*, A.B.A. J. (Feb. 1, 2015), http://www.abajournal.com/magazine/article/business_method_and_software_patents_may_go_through_the_looking_glass_after [<http://perma.cc/C5VU-YWVP>] (reviewing evidence of court and administrative agency action in invalidating business method and software patents based on the *Alice* holding).

317. See, e.g., Gene Quinn, *Federal Circuit Finds Software Patent Claim Patent Eligible*, IPWATCHDOG (Dec. 5, 2014), <http://www.ipwatchdog.com/2014/12/05/federal-circuit-finds-software-patent-claim-patent-eligible> [<http://perma.cc/2R3K-8CMQ>] (discussing one such case). Some scholars have argued for standards akin to this standard previously. See, e.g., Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 WIS. L. REV. 905, 962–63 (2012).

318. Quinn, *supra* note 317.

319. Ryan Davis, *5 Tips for Getting Software Patents Approved Post-Alice*, LAW360 (Sept. 2, 2014), <http://www.law360.com/articles/572491/5-tips-for-getting-software-patents-approved-post-alice> [<http://perma.cc/5WFH-AV4R>] (advising that narrowing claims and including more specific technical details in a patent application may well help save a patent from invalidation); Gene Quinn, *The Road Forward for Software Patents Post-Alice*, IPWATCHDOG (Feb. 25, 2015), <http://www.ipwatchdog.com/2015/02/25/the-road-forward-for-software-patents-post-alice> [<http://perma.cc/2BS8-YPDL>] (“[B]ased on the few decision points we have so far it seems that the courts will place disproportionate weight on the sufficiency of the specification when making decisions about patent eligibility . . . which means patent applications and issued patents must have robust technical disclosure to even stand a chance of getting through the patent eligibility threshold.”).

320. Fromer, *supra* note 19 (arguing in favor of the benefits of disclosure generally). But see Holbrook, *supra* note 18 (arguing generally that information disclosures under patent law have little if any value).

disclosures in the patent document will enable patent holders to use patents more effectively in signaling to product, labor, and capital markets information about themselves, their technologies, and their innovation preferences.³²¹

But this “sea-change” in patentable subject matter standards could have adverse effects on the informational role of patents as well. First, if fewer parties pursue or maintain patents because of these decisions,³²² or if fewer patents are valid based on the § 101 question more generally,³²³ then fewer parties may have exclusive rights with which to signal information to the relevant markets. Instead, such parties may opt for trade secrecy given the uncertain state of patentable subject matter following the Supreme Court’s decisions.³²⁴ And a greater preference for trade secrecy may mean that fewer inventions are disclosed to the public in general.³²⁵

Second, more specific and detailed disclosures may mean that, for the patents that are granted, the scope of those rights is severely limited. For instance, as mentioned, though courts are not supposed to read limitations from the rest of the patent document into the patent claims as a general matter, they sometimes do based on a variety of patent law doctrines.³²⁶ Indeed, core patent law requires courts to read patent claims “in light of the specification,”³²⁷ which includes the inventor’s technical disclosures. Furthermore, since parties are likely to narrow claims in hopes of overcoming the patentable subject matter hurdle, patent rights may be further limited.³²⁸ Hence, by including more specific and detailed disclosures and claims in their patent applications in response to the Supreme Court’s patentable subject matter decisions, inventors may

321. See *supra* Parts I & III.

322. See Seidenberg, *supra* note 316 (indicating that pursuing patents on software and business methods may not be worth it in light of the Supreme Court’s new standards and the high invalidation rate of such patents post the Court’s decisions).

323. See Jasper L. Tran, *Software Patent: One-Year Review of Alice v. CLS Bank*, 97 J. PAT. & TRADEMARK OFF. SOC. 532, 534 (2015) (noting that in the year since the *Alice* decision, around 82% of software patents have been invalidated when applying the *Alice* standards).

324. Schwartz, *supra* note 73 (describing the conventional wisdom for selecting between trade secrecy and patent protection).

325. For a counterargument to this contention, see Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, 61 STAN. L. REV. 311, 312–15 (2008) (arguing that trade secret protection actually facilitates the disclosure of inventions).

326. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–23 (Fed. Cir. 2005) (en banc) (describing sources to be used in construing patent claims, including “intrinsic evidence” such as the technical disclosures included as part of the patent application).

327. *Id.*

328. Davis, *supra* note 319.

inadvertently (or advertently) limit their patent rights. And restricting rights in such a manner may mean that the informational potency of those rights also decreases, since parties purporting to sacrifice those rights may not be sacrificing much.³²⁹

As to the first concern—that parties will either stop pursuing patents or those that they do obtain will simply be invalid—a few responses are in order. First, it seems unlikely that parties serious about innovation will simply choose to forego patent protection for their innovations, including with respect to software and business method innovations, which some claim have been most impacted. Patents provide significant advantages, including strict liability for infringers and unique rights of exclusion, over other forms of protection.³³⁰ This likelihood of ongoing patenting may be particularly high since information technology is so important in today's global economy.³³¹

Second, the Court was clear in *Alice* and its other decisions that it was not precluding any specific type of technology from patent eligibility. *Alice*, for instance, does not mention the word “software” or explicitly discuss “business methods.”³³² Thus, the more likely effect of *Alice* and the other Supreme Court decisions is that patent drafters will adjust their practices to adapt to these cases.³³³ And the primary adjustment appears to be including more specific details in the patent document itself.³³⁴

Third, patents obtained post-*Alice* will likely have greater informational value as a result of the more detailed and specific disclosures contained therein, which may provide another reason for some parties to pursue such patents.³³⁵ Indeed, since most patents are never litigated (and

329. See *supra* Section III.A (discussing signaling theories that postulate that the lower the cost of the signal, the less credible it is likely to be).

330. But for recent scholarship challenging the assertion that patent law is a strict liability regime see Saurabh Vishnubhakat, *An Intentional Tort Theory of Patents*, 68 FLA. L. REV. (forthcoming 2016), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2492200 [<https://perma.cc/S7DG-F3VF>].

331. See generally WILLIAM J. KRAMER, BETH JENKINS & ROBERT S. KATZ, *THE ROLE OF THE INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR IN EXPANDING ECONOMIC OPPORTUNITY* (2007).

332. Robert Sachs, *Alice, the Illusory Death of Software Patents*, IPWATCHDOG (June 27, 2014), <http://www.ipwatchdog.com/2014/06/27/alice-the-illusory-death-of-software-patents> [<http://perma.cc/6L7J-N8HH>].

333. Quinn, *supra* note 317 (discussing what adaptations make sense in light of *Alice*).

334. Davis, *supra* note 319 (same); Quinn, *supra* note 317.

335. See Seidenberg, *supra* note 316; *supra* text accompanying note 321.

thus never invalidated)³³⁶ the many uses of patents—including the informational functions discussed herein—may have greater relevance in a post-*Alice* world.³³⁷

Of course, certain parties may opt out of the patent system as a result of these decisions. For instance, so-called “patent trolls”—which assert patents against others, but do not produce products or services themselves—may opt out of the system because, as some contend, their models depend in many cases on asserting overbroad and vague patents and then relying on the high costs of litigation to force a settlement.³³⁸ *Alice* and other patent law changes discussed *infra* may make these models more difficult to sustain.³³⁹ And if patent trolls stop providing a ready market for those wishing to sell some stake in their patents, it may mean that fewer parties ultimately pursue patents.³⁴⁰

But to the extent that such parties actually do rely on vague and ambiguous patents in their business models, the effects of the Supreme Court’s decisions would seem to be positive as an informational matter. After all, excessive ambiguity and vagueness in patents make informational

336. For reasons why alleged infringers may not focus on invalidity defenses even when patent litigation is commenced, see generally Roger Allan Ford, *Patent Invalidity Versus Noninfringement*, 99 CORNELL L. REV. 71 (2013).

337. Tran, *supra* note 323.

338. Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117, 2173 (2013) (indicating that in the IT industry, overbroad patents are the norm and facilitate patent trolling); Lisa Allen, *The Problem With Patent Trolls*, SAND HILL (Jan. 26, 2015), <http://sandhill.com/article/the-problem-with-patent-trolls> [<http://perma.cc/5C9V-LK3E>] (indicating that patent trolls often rely on vague and overbroad software patents, and that the *Alice* and other recent Supreme Court decisions may make the patent trolling business model more difficult to sustain because these decisions may make such patents even more suspect than they already were); Claire Bushey, *Why This Lawyer Is Rethinking Patent Lawsuits*, CRAIN’S CHICAGO BUSINESS (June 6, 2015), <http://www.chicagobusiness.com/article/20150606/ISSUE01/306069991/tripping-up-the-trolls> [<http://perma.cc/7ACX-HM4S>] (indicating that some prominent patent trolls are considering abandoning the business because of *Alice*, among other patent law changes).

339. For recent evidence suggesting this type of business model is alive and well, however, see Mike Masnick, *Patent Trolls Strike Back: Trolling Rebounds After Brief Supreme Court-Enabled Dip*, TECHDIRT (July 14, 2015), <https://www.techdirt.com/articles/20150714/10344431637/patent-trolls-strike-back-trolling-rebounds-after-brief-supreme-court-enabled-dip.shtml> [<http://perma.cc/ZPK6-ZSTU>] (noting a recent spike in patent troll activity).

340. Paul Schneck, *Not So Scary, After All: In Defense of Patent Trolls*, FORBES (Feb. 1, 2013), <http://www.forbes.com/sites/ciocentral/2013/02/01/not-so-scary-after-all-in-defense-of-patent-trolls> [<http://perma.cc/P2MG-VXAH>] (arguing that patent trolls are allies with independent inventors and others versus large corporations).

content more difficult to decipher.³⁴¹ So to the extent that post-*Alice* such uncertainty is more difficult to foment, all the better.

But it may still be the case that some parties cease pursuing and patenting their inventions absent the patent troll ally. In other words, some inventors may be motivated to invent by the possibility of monetizing those inventions by patenting them and then licensing or selling their patents to a patent troll or similar entity.³⁴² Rather than boosting the informational value of patents, therefore, the Supreme Court's patentable subject matter cases may mean that there's simply less information created.³⁴³

There are reasons to doubt this outcome, however. For instance, for inventive ideas that do have societal value, it seems likely that market opportunities will continue to exist or develop over time, including by way of patent sales or licensing.³⁴⁴ In other words, while business models that rely on vague and overbroad patents may dry up, others will likely step in to harness otherwise valuable inventive ideas, which in turn should provide parties with incentives to invent these valuable things.³⁴⁵

The second possible negative implication of the Supreme Court's patentable subject matter decisions mentioned above also merits a few responses. To recapitulate that concern: because the Supreme Court cases appear to require more specific and detailed disclosures to save patent claims from invalidation, the result may be excessively narrow patents. And such narrowness may mean that patents have less informational impact because (1) the narrow rights, when sacrificed, are simply less

341. See Fromer, *supra* note 19.

342. See generally James F. McDonough III, *The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy*, 56 EMORY L.J. 189 (2006) (arguing that patent trolls benefit the market by providing liquidity, market clearing, and increased efficiency to the patent markets).

343. *Id.*

344. There is some recent evidence, however, that patent licensing and the patent troll model in general does not actually lead to innovation. See, e.g., Robin Feldman & Mark A. Lemley, *Does Patent Licensing Mean Innovation?* (Stanford Law & Econ., Olin Working Paper No. 473, 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2565292 [<https://perma.cc/6CKA-UCHX>] (concluding that it does not). But see Gene Quinn, *Flawed Survey Erroneously Concludes Patent Licensing Does Not Contribute to Innovation*, IPWATCHDOG (Feb. 22, 2015), <http://www.ipwatchdog.com/2015/02/22/flawed-survey-erroneously-concludes-patent-licensing-does-not-contribute-to-innovation> [<http://perma.cc/K8PD-LDPA>] (critiquing Feldman & Lemley).

345. But as noted above, recent evidence suggests that patent trolling is alive and well, despite *Alice*. So the worry that these patent dealers are set to vanish, and with them the good that they do, seems exaggerated at the least. See Masnick, *supra* note 339.

meaningful as signals, and (2) narrowed patents may mean less technical disclosure in some respects.

As mentioned, however, the greater detail and specificity required will likely increase the informational value of patents on the whole because that detail and specificity will allow parties to be even more precise in their messaging.³⁴⁶ Recipients of those informational signals will therefore benefit, since they will have greater ease deciphering the signal's actual meaning.³⁴⁷ Indeed, patent rights based on broad patent claims with minimal disclosures may generally have less informational value, even when used in an explicitly informational context, because their scope remains so uncertain.³⁴⁸

Of course, it remains true that narrower patents may have less informational impact in some cases, simply because sacrificing these narrower rights in a patent pledging context may be less meaningful.³⁴⁹ By way of analogy, a party claiming to support some cause by donating a few dollars to that cause may have less credibility than the party that donates thousands of dollars to the same cause. Similarly, a patent holder with a narrow (and thus less economically valuable) patent may obtain less signaling impact when pledging that patent than if they were able to pledge a broader, more economically valuable patent.³⁵⁰

But broad, economically valuable patents are still available, even after the Supreme Court's recent decisions.³⁵¹ Rather than prohibiting such patents, the Supreme Court's patentable subject matter decisions instead appear to require patentees making such claims to support them with

346. See Seidenberg *supra* note 316; *supra* text accompanying note 321.

347. Fromer, *supra* note 19, at 568.

348. *Id.*

349. See *supra* Section III.A (discussing signaling theories that postulate that the lower the cost of the signal, the less credible it is likely to be).

350. *Id.*

351. Bradley Knepper & Benjamin Lieb, *The New Methods for Drafting Patent Applications Post-Alice*, INSIDE COUNSEL (Jan. 23, 2015), <http://www.insidecounsel.com/2015/01/23/the-new-methods-for-drafting-patent-applications-p> (describing drafting methods to overcome the hurdles to patentability that *Alice* introduced); Robert Merges, *Symposium: Go Ask Alice—What Can You Patent After Alice v. CLS Bank?*, SCOTUSBLOG (June 20, 2014) [<http://www.scotusblog.com/2014/06/symposium-go-ask-alice-what-can-you-patent-after-alice-v-cls-bank>] [<http://perma.cc/L3NL-QARQ>] (noting that the *Alice* decision did not rule that software or business methods are ineligible for patent protection); Thomas D. Nguyen, *Patent Eligibility of Computer Software Inventions in a Post-Alice Era*, NAT'L L. REV. (May 15, 2015), <http://www.natlawreview.com/article/patent-eligibility-computer-software-inventions-post-alice-era> [<http://perma.cc/E6UM-L6NX>] (noting that software patentability is still possible following the *Alice* decision).

extensive technical disclosures that demonstrate that the inventor is not simply claiming an abstract idea, law of nature, or natural phenomenon (or is not claiming beyond what the inventor actually invented).³⁵² If an inventor is unable to satisfy this threshold, then one of the patentable subject matter exceptions may apply.³⁵³ And while the more detailed technical disclosures may narrow the rights significantly, such outcomes seem to better align patent law with its purpose: granting inventors rights to what they actually invented.³⁵⁴ These outcomes may also actually make the patents more valuable, since they are, on the basis of such increased specificity, more likely to be found valid.

Of course, if lower courts interpret the Supreme Court's standards post-*Alice* such that essentially all software or business method patents are framed as abstract ideas or laws of nature (and are thus invalid), then that may be a cause for concern for the informational value of patents, as well as the value of patents in general.³⁵⁵ But at least in theory (and some limited practice since the decisions),³⁵⁶ the Supreme Court's decisions do not require such a result, instead appearing to require detailed and specific disclosures and claims in order to avoid having one of the patentable subject matter exceptions apply.³⁵⁷ And that approach promises an increase of informational value for patents, rather than a diminution thereof.

In sum, the Supreme Court's recent patentable subject matter cases seem poised to increase the informational value of patents, both to the general public and to patentees using patents as informational tools. While the Court's standards will certainly undergo revision over time, for now the trend appears positive as an informational matter.

B. DEFINITE CLAIMS

The Supreme Court also recently implicated the informational value of patents with its decision in *Nautilus, Inc. v. Biosig Instruments, Inc.*³⁵⁸ At issue in the *Nautilus* case was the Patent Act's requirement that the patent document conclude with "one or more claims particularly pointing out and

352. Knepper & Lieb, *supra* note 351.

353. *Id.*

354. *See generally* Holbrook, *supra* note 18 (arguing that enablement that manifests possession is more theoretically consistent with the typical justifications for the patent system).

355. Tran, *supra* note 323 (detailing such a general trend).

356. *Id.* (detailing some cases where patents have not been invalidated based on application of the *Alice* standard).

357. Knepper & Lieb, *supra* note 351.

358. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014).

distinctly claiming the subject matter which the inventor or a joint inventor regards as his invention.”³⁵⁹ These formal patent claims define the scope of what a patent covers, yet uncertainty remained regarding how “definite” the claims needed to be, given that language will always remain an imperfect tool for delineating boundaries.³⁶⁰

The Court of Appeals for the Federal Circuit, which has nationwide jurisdiction for appeals that include a patent issue, had previously set a somewhat indefinite definiteness standard.³⁶¹ It had held that a claim is indefinite “only when it is ‘not amenable to construction’ or ‘insolubly ambiguous.’”³⁶² But the Supreme Court in *Nautilus* overruled the Federal Circuit, holding instead that the definiteness standard is met when a “patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.”³⁶³

This “reasonable certainty” standard should thus result in more concrete and clear patent claims than the Federal Circuit’s previous standard. Indeed, that former standard promised a rather indefinite future, since, so long as *some* construction could be applied to the claims, the patent claims satisfied the Federal Circuit’s standard.³⁶⁴

This greater level of definiteness, in turn, would appear to boost the informational value of patents, to both the public as well as patentees that use their patents as informational tools. It boosts the informational value of patents to the public by making it more likely that patent claims will be more specific and clear than they otherwise may have been. That this would be so is intuitive: patent drafters will almost certainly take the *Nautilus* standard into account when drafting patent claims, which dictates greater precision than the Federal Circuit’s previous standard required.³⁶⁵ With these more specific and definite claims, patent owners using patents as informational tools should also benefit because their signals will be that much clearer. Hence, while the *Nautilus* decision may appear at first blush as a loss of value to patent owners, taking into account the informational

359. 35 U.S.C. § 112(b) (2012).

360. Fromer, *supra* note 45, at 757–58 (discussing the imprecision of language).

361. *Biosig Instruments, Inc. v. Nautilus, Inc.*, 715 F.3d 891, 898 (Fed. Cir. 2013), *cert. granted*, 134 S. Ct. 896 (2014), *vacated*, 134 S. Ct. 2120 (2014).

362. *Id.*

363. *Nautilus*, 134 S. Ct. at 2128–29 (2014).

364. *Id.*

365. Harold C. Wegner, *Post-Nautilus Patent Drafting for Claim Definiteness and Proper Generic Scope*, 10TH ANN. ADVANCED PAT. L. INST. (Mar. 12–13, 2015) (providing drafting guidance to patent prosecutors in light of the *Nautilus* decision).

value of patents suggests it may also be a win in certain informational respects.

Of course, many of the same concerns raised in the preceding Section may equally apply here. That is, the reduced scope of patent claims that the Supreme Court's definiteness standard could bring about may dampen incentives to invent and pursue patents on those inventions. Weakening those incentives, therefore, may mean less inventive information created and publicly disclosed. Furthermore, the narrower scope of patent claims that the *Nautilus* decision may lead to may also inadvertently lessen the informational impact of patents in, for instance, patent pledging scenarios.

But for the same reasons discussed above, there is good reason to doubt such outcomes. In the year since the *Nautilus* case, for instance, there has been no discernible reduction in the number of patent applications filed.³⁶⁶ Parties are still filing a record number of patent applications, and are likely simply taking into account the Supreme Court's new standards when filing them. Furthermore, though these applications may be narrower in theory because they are more definitively scoped, it may also be the case that they are consequently more valuable because they are less likely to be found invalid. Indeed, as an informational matter, these more precise patent claims should mean that both the public and patentees benefit.

In sum, the *Nautilus* decision is another recent Supreme Court decision that promises informational benefits to patentees and the public alike. While the Court's standard will almost certainly undergo refinement in subsequent cases, for now the *Nautilus* holding points to a more promising informational future for patents.

VI. AN INDUSTRY-SPECIFIC PHENOMENON?

Much of the informational value of patents discussed in the preceding Parts may be industry-specific. For instance, other scholars have argued that patents play different roles depending on the industry.³⁶⁷ In the

366. See, e.g., U.S. Patent Trade Office, *U.S. Patent Activity Calendar Years 1790 to the Present, Table of Annual U.S. Patent Activity Since 1790*, USPTO, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm [<http://perma.cc/U2S8-XGGN>] (last modified Oct. 12, 2015) (showing that 2014 saw the most patent applications filed with the U.S. Patent Office in history, despite the *Nautilus* ruling issuing in July of that year).

367. See generally JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK* (2008) (arguing that the patent system imposes more costs than benefits in most technology sectors); BURK & LEMLEY, *supra* note 36 (arguing that courts should treat different technology

pharmaceutical and biotechnology industries, for instance, a patent's rights of exclusion appear to be more critical in helping parties recoup their traditionally higher research and development costs.³⁶⁸ Conversely, in the IT industries generally, and the software industry in particular, patents may not be as critical in this regard because of the relatively lower costs of research and development and other factors that enable parties to thrive without having to rely on asserting exclusive rights against others.³⁶⁹

The patent pledging phenomenon provides some support to the broader point that the role of patents differs depending on the industry. For instance, though the phenomenon cannot be confined to any one industry, most of the known pledges have been made in the IT industry, while only a few relate to biotechnology, and none as of yet have come from pharmaceutical companies.³⁷⁰ Hence, though patents may have latent informational value in the biotechnology and pharmaceutical industries, this informational value is currently most clearly manifest in the IT sector.

But the more specific point that patents are unnecessary or even harmful in the IT industry, simply because participants in these industries do not rely on a patent's exclusionary rights the same way they do in the biotechnology and pharmaceutical industries, is incomplete. Indeed, as discussed in Parts III and IV *supra*, the informational value of patents manifest in the patent pledging context highlights previously unexamined informational roles of patents in promoting a variety of economic goals. While this informational value of patents may not always offset the costs that patents purportedly impose in industries, in some cases it may. This informational role of patents should thus become a greater consideration in developing patent law and policy, particularly in industries, such as IT, where that value is apparent.

Indeed, some scholars argue that courts already de facto tailor patent law according to industry, and that courts can address many other problems in patent law by increasing this trend.³⁷¹ To the extent that they do so, courts should take into account the informational value of patents in performing such tailoring. For instance, courts in applying patent law's disclosure requirements to IT-related patents would do well to interpret

sectors differently in terms of patent law in order to elide significant hindrances to innovation that the current patent system causes).

368. BURK & LEMLEY, *supra* note 36.

369. *Id.*

370. Program on Info. Justice, *supra* note 3 (listing only two out of 160 patent pledges relating to biotechnology, and none relating to the pharmaceutical industry).

371. BURK & LEMLEY, *supra* note 36.

those requirements expansively. Doing so would increase the informational value of patents by requiring patent applicants to include more specific technical details in their applications. While such requirements may at first blush seem like a loss of value to such patent holders, in reality they may actually make those patents more valuable as an informational matter. What is more, doing so would also tailor the scope of the patent claims to better fit how innovation typically occurs in the industry, as other scholars have argued.³⁷²

By neglecting to take into account the informational role of patents in their decisions, on the other hand, courts fail to consider an increasingly important use of patents in certain industries and may, consequently, craft decisions that harm innovation in those industries. For instance, while the Supreme Court cases reviewed above may have significant informational impacts, particularly in the software industry, it seems clear that the Court's reasoning did not explicitly take into account those possible impacts. This Article's findings suggest that it and other courts should.

This point applies to Congress and other legislative bodies as well. Indeed, in recent years Congress has implemented the most far-reaching patent reforms in decades.³⁷³ And it continues to consider a variety of additional patent law reforms, largely aimed at curbing the "patent troll" phenomenon.³⁷⁴ State legislatures have also become involved with a variety of litigation reforms aimed at addressing what is perceived as excessive patent litigation.³⁷⁵ Yet absent from these legislative discussions are the informational roles that patents may play. This is not to suggest that such informational roles should dominate such discussions. But it is to argue that these roles should become part of the conversation.

372. *Id.*

373. Quentin Palfrey, *Patent Reform: Celebrating the One Year Anniversary of the America Invents Act*, THE WHITE HOUSE BLOG (Sept. 17, 2012), <https://www.whitehouse.gov/blog/2012/09/17/patent-reform-celebrating-one-year-anniversary-america-invents-act> [<http://perma.cc/95N7-PSGU>] (identifying the America Invents Act of 2011 as "one of the most significant legislative reforms to the patent system in our Nation's history").

374. *Patent Progress's Guide to Federal Patent Reform Legislation*, PATENT PROGRESS, <http://www.patentprogress.org/patent-progress-legislation-guides/patent-progress-guide-patent-reform-legislation> [<http://perma.cc/GRB5-QVB2>] (reviewing six separate bills in Congress relating to patent law for the 2015–2016 term).

375. Jonathan Griffin, *States, Congress Continue to Fight Against Patent Trolls*, NCSL BLOG (Mar. 18, 2015), <http://www.ncsl.org/blog/2015/03/18/states-congress-continue-to-fight-against-trolls.aspx> [<https://perma.cc/Q7NB-9BPK>] (reviewing evidence showing that thirty-nine out of fifty states have introduced some form of legislation aimed at curbing so-called patent troll problems).

Indeed, better recognizing the informational value of patents in specific industries bolsters the case for more disclosure generally, as discussed in the judicial context above. But Congress need not leave the issue for courts to sort out; it could also take an active role in both studying the patent pledging phenomenon and altering patent law in order to better serve industries that increasingly rely on patents as informational instruments rather than solely as exclusionary ones.

VII. CONCLUSION

Traditionally, patents have been viewed as primarily exclusionary tools. Indeed, conventional patent law theories assume that the key benefit of a patent to the patent owner is the exclusive rights that come with it. Yet the patent pledging phenomenon reviewed in this Article shows that patents can also yield significant informational value for both patent holders and the public alike. As such, these informational roles of patents deserve greater consideration by courts and legislatures in formulating and implementing patent law and policy, particularly in industries, such as IT, where patent pledging is more prevalent.

This is not to say that the informational and exclusionary values of patents are mutually exclusive, or that one value need trump the other in policy discussions. Indeed, the same party may use patents in a variety of ways, sometimes as an informational tool, and other times as an exclusionary one. Such varied uses should not be viewed as conflicting or even contradictory. Instead, they simply reflect a variety of economic interests that a party may have, and which different uses of patents may facilitate. Better adapting patent law theory and policy to these realities would thus improve patent law's capacity to support innovators in pursuing their varied economic goals and thereby promote innovation more generally. And that, in the final analysis, is the purpose of having a patent system at all.

None of this is to say that patents could not be improved as informational tools. Some previous proposals aimed at improving disclosures under patent law, for instance, may also have merit when viewing patents as informational tools.³⁷⁶ And proposals focused on limiting patent holders' typically robust rights of exclusion under certain circumstances may also, if implemented, improve the informational value

³⁷⁶ Fromer, *supra* note 19, at 563–94 (discussing various means for improving disclosures under patent law).

and uses of patents.³⁷⁷ This Article does not explicitly review and assess these proposals. But it does suggest that such proposals—and patent law and policy in general—should better take into account the informational value of patents articulated in this Article.

377. See, e.g., Katherine J. Strandburg, *What Does the Public Get? Experimental Use and the Patent Bargain*, 2004 WIS. L. REV. 81 (2004) (proposing expanding the experimental use exception to patent infringement).