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**A JUKEBOX FOR PATENTS: CAN PATENT LICENSING OF
INCREMENTAL INVENTIONS BE CONTROLLED BY
COMPULSORY LICENSING?**

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I. INTRODUCTION

According to the classical understanding of how patents work, a company takes each of its patents, sees if it reads onto the competitor's product and, if it does, either commences negotiations to establish royalty payments or files patent litigation to claim the appropriate damages, royalties, or injunction.¹ Similarly, as a new product is developed, the company examines the universe of relevant granted patents to make certain that no infringement will be triggered by the new product.² If a covering patent is found, the company—at least if it is a “good” actor—will attempt to negotiate a license to use the patented technology and, if that fails, either design the new product around the patent so that infringement will be avoided³ or abandon the product development effort.⁴

The idealized model described above does not match the reality of the modern patent system, as a focused examination of a product in comparison to the relevant universe of patents is much less likely to occur now than in the past.⁵ This article examines this disconnect between the reality of how patents are being used today and the underlying principal of patent law that a monopoly is granted in

¹ See Tom Harris, *How Patents Work*, HOWSTUFFWORKS, <http://money.howstuffworks.com/patent.htm> (last visited Mar. 7, 2016); Jim Anderson, *Why IT Managers Need to Know About How Patents Work*, THE ACCIDENTAL IT LEADER (Jan. 15, 2015), <http://theaccidentalliteleader.com/innovation-2/why-it-managers-need-to-know-about-how-patents-work>; WORLD INTELLECTUAL PROP. ORG., *Frequently Asked Questions: Patents*, http://www.wipo.int/patents/en/faq_patents.html (last visited Mar. 7, 2016); Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49, 61–69 (2005) (describing how patent claims serve to inform others about the scope of the invention made). To clarify the discussion, this article will describe the problems being addressed using the language of product patents. The issues being discussed are equally apropos to process patents, however, so the discussion of product patents is not meant to exclude process patents.

² See DAVID A. BURGE, *PATENT & TRADEMARK TACTICS & PRACTICE* 102–05 (3d ed. 1999). *But see* Sean B. Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621, 637 (2010) (criticizing many current patents for failing to clearly describe the invention made).

³ See, e.g., *State Indus. Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1235–36 (Fed. Cir. 1985) (acknowledging that “‘design[ing] around’ a competitor’s product” is part of the patent system).

⁴ Julie Bennett, *From Idea to Market*, ENTREPRENEUR (Sept. 20, 2010), <http://www.entrepreneur.com/article/217332> (advising those who find an existing patent for their product to “stop right there,” instead of funding product development for a product that already exists).

⁵ See *infra* Part II.

exchange for the disclosure of new technologies.⁶ Specifically, it will address two problems that plague the current patent system:⁷ the use of “haystack” patent portfolios rather than individual patents and the overwhelming abundance of newly issued patents.⁸

A possible solution to these problems is proposed in the form of a compulsory licensing system for most patents. This solution is described as a method of identifying the types of changes that would be needed to overcome the problems and not with an expectation that it could be adopted easily⁹ or that it would not raise issues within international norms.¹⁰

II. THE CURRENT PATENT SYSTEM AS A MARKET FAILURE FOR A MAJORITY OF ISSUED PATENTS

A. Patent Portfolios as “Haystacks”

Recently, a practicing patent attorney¹¹ used an interesting analogy for how he uses his company’s patent portfolio when either negotiating

⁶ See Ralph D. Clifford, Thomas G. Field, Jr. & Jon R. Cavicchi, *A Statistical Analysis of the Patent Bar: Where Are the Software-Savvy Patent Attorneys?*, 11 N.C. J. LAW & TECH. 223, 224–26 (2010).

⁷ *Id.* at 224–26 nn.4–7.

⁸ *Id.*

⁹ It is highly unlikely that the current Congress would be receptive to the proposal as the countervailing policies that need to be balanced in a patent provision appear to freeze Congress in place. *Cf.* Tom Risen, *Congress, Silicon Valley Spar on Tackling Patent Trolls*, U.S. NEWS & WORLD REP. (July 14, 2015 6:49 PM), <http://www.usnews.com/news/articles/2015/07/14/congress-silcon-valley-spar-on-how-to-tackle-patent-trolls>.

¹⁰ It is not clear that compulsory licenses would comply with the obligation under existing treaty obligations to make patent rights enforceable. *See* Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), art. 28(1)(a), Apr. 15, 1994, 1867 U.N.T.S. 154, available at http://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm (“[W]here the subject matter of a patent is a product, to prevent third parties not having the owner’s consent from the acts of: making, using, offering for sale, selling, or importing (6) for these purposes that product . . .”). It is an open question whether the compulsory licenses described in this article can serve as “owner’s consent.” In any case, the legally binding nature of the treaty is far from clear. *See* 19 U.S.C. § 3512 (2012) (“No provision of any of the Uruguay Round Agreements, nor the application of any such provision to any person or circumstance, that is inconsistent with any law of the United States shall have effect.”). *See also* David A. Gantz, *A Post-Uruguay Round Introduction to International Trade Law in the United States*, 12 ARIZ. J. INT’L & COMP. L. 1, 9 (1995).

¹¹ The attorney works as in-house patent counsel for a large computer firm. As the talk he gave was not a public presentation, his and his company’s anonymity is preserved.

or litigating against a competing firm. He constantly referred to his company's patent portfolio as a "haystack." As his talk developed, it became clear that analogy was quite apt, but was not the one that immediately sprung to mind. Typically, a "haystack" is a reference to the proverbial "needle in a haystack."¹² On first impression, one could assume that his work for his company involved finding the patent needle within the haystack of his firm's thousands of patents. He soon made it clear, however, that this is not what he meant.

Much of the licensing work that he was doing had nothing to do with an identified technological product that read on to an identified patent;¹³ instead, with the tens of thousands of patents in each company's portfolio, the odds were high that at least some of them would be relevant. In other words, both companies now assume that the needle patent—one that actually does read onto the technology—is in the portfolio somewhere but, like the needle in the haystack, no one has the time or interest to actually read the patents and find the relevant sharp.

Thus, he stated, it is not important to have an identified patent that reads onto the competitor's product; rather, it is important to have a haystack of patents that is so large that no competitor would ever have the time to sort through the haystack to find out if the needle is actually there.¹⁴ The threat of using the haystack was enough, as a practical matter, to force the surrender of the competitor because its size would present an overwhelming burden of comprehension (and expense, if litigation occurs).¹⁵ Under the haystack theory, a thousand patents—even if all of them are likely to be found invalid if challenged in court—is better than one good one.¹⁶ No one, after all, can afford to challenge a thousand patents,¹⁷ but may easily be able to fund the challenge of

¹² See ERIC PARTRIDGE, A DICTIONARY OF CLICHÉS 151 (Dutton Paperback ed., 1963).

¹³ "Reading on" is the term of art for the process of comparing the claims in a patent to an allegedly infringing device as, in most cases, if there is an identity between the claims and the device, infringement has occurred. See, e.g., *Rice v. Schutte*, 38 App. D.C. 175, 177–78 (D.C. Cir. 1912).

¹⁴ See Justin R. Orr, Note, *Patent Aggregation: Models, Harms, and the Limited Role of Antitrust*, 28 BERKELEY TECH. L.J. 525, 526 (2013) (discussing aggregating weak patents into portfolios as a market tactic). As a practical matter, there are likely to be relevant patents to any product if a company owns thousands of patents within the same art. Cf. *id.*

¹⁵ *Id.*

¹⁶ See, e.g., Malcom Gladwell, *NIH May Seek to Void Firm's Patent on AZT*, WASH. POST, May 29, 1991, available at <https://www.washingtonpost.com/archive/politics/1991/05/29/nih-may-seek-to-void-firms-patent-on-azt/3270d0fa-55d7-4995-af2b-293db96a4fff/>.

¹⁷ According to a survey conducted by the American Intellectual Property Law Association in 2013, the cost to defend a patent suit runs from an average of

one.

Of course, the patent law definitional model established in the United States is built on the use of needles, not haystacks.¹⁸ Although some modifications to the litigation system may encourage a partial return to a needle over a haystack design parameter within the patent system,¹⁹ more systematic change appears necessary to make this universal.

B. More Than a Quarter of a Million New Patents a Year

The patent system is dependent on its users understanding the entire portfolio of patented technology within the relevant area as well as absorbing advancing technology once it is disclosed in newly granted patents.²⁰ Any company that is developing a new product is expected, after all, to design it in a way that does not infringe existing or newly issued patents.²¹ A failure to meet this requirement results in liability for infringement.²² Consequently, to protect a company against suit, its patent attorneys must appreciate the entire set of existing patents and must keep abreast of newly issued ones.²³ The reality today, however, is that both of these tasks are practical impossibilities.²⁴

Currently, there are an estimated 3 million active utility patents,²⁵

\$516,000 if the claim is less than \$1,000,000 and the action ends at the discovery phase to a mean of \$2,671,000 if the claim is more than \$10,000,000 and the action requires a full litigation on the merits. AILPA, Rpt. of the Econ. Survey 2013 at I-145–46; *see also* Brief for Amicus Curiae Computer & Communications Industry Ass’n in Support of Petitioner at 11, *WildTangent, Inc. v. Ultramercial, LLC*, 134 S. Ct. 2870 (2014) (No. 13-255), 2013 WL 5372423, at *11.

¹⁸ *See, e.g.*, John Raidt, *Patents and Biotechnology*, U.S. CHAMBER OF COMM. FOUND., <https://www.uschamberfoundation.org/patents-and-biotechnology> (last visited Mar. 7, 2016) (discussing one of the challenges to patenting in the biotechnology industry is excessive litigation).

¹⁹ *See* Dennis Crouch, *Patent Reform: Innovation Act of 2015*, PATENTLYO (Feb. 15, 2015), <http://patentlyo.com/patent/2015/02/patent-reform-innovation.html> (describing litigation reforms in the submitted bill).

²⁰ DAVID A. BURGE, *PATENT & TRADEMARK TACTICS & PRACTICE* 103 (3d ed. 1999) (“As patents issue to competitors and in the specific fields of one’s interests, you should systematically order and review copies of them.”).

²¹ *See generally* Oskar Liivak, *Rethinking the Concept of Exclusion in Patent Law*, 98 GEO. L.J. 1643 (2010) (discussing the preemptive effect of the current patent system and proposing an alternative).

²² *See* 35 U.S.C. § 271 (2012). Only a limited defense is available to commercial use of a patent that starts more than a year before the patent application is filed or disclosed. *Id.* § 273.

²³ *See* BURGE, *supra* note 20, at 103.

²⁴ *See infra* notes 25–31 and accompanying text.

²⁵ *See* Dennis Crouch, *Patent Number Nine Million*, PATENTLYO (Apr. 7, 2015), <http://patentlyo.com/patent/2015/04/patent-number-million.html> (noting that

continued . . .

many of which could read onto a new product. This number is not static as record numbers of new patents are being issued each year.²⁶ In 2013, nearly 278,000 new utility patents were issued.²⁷ In 2014, the number of newly issued utility patents increased to over 300,000.²⁸ To process just these new 300,000 patents, you would need to read and understand 144 of them per business hour for eight hours per day on every business day—which is the equivalent of reading and understanding a new patent every twenty-five seconds.²⁹ Even if a hypothetical patent attorney could work twenty-four hours a day, seven days a week, more than thirty-four patents an hour would need to be evaluated.³⁰ Under the best of circumstances, it takes more than twenty-five seconds (or even two minutes) to read and understand a patent.

Even if it is assumed that the relevant newly issued patents can be found, read, and understood at this rate, failure is still probable. No time is left to review the 3 million patents that have already been issued. Understanding the technology disclosed in existing and newly issued patents thus appears to be a Sisyphean burden.³¹

approximately one-third of the nine million issued utility patents are currently active).

²⁶ Dennis Crouch, *USPTO Grants and Applications Both Down (Slightly) for FY2015*, PATENTLYO (May 26, 2015), <http://patentlyo.com/patent/2015/05/applications-slightly-fy2015.html> [hereinafter Crouch, *USPTO Grants*]. Some are predicting that 2014 is a peak year in the number of patents issued. *Id.* Even if the predicted drop in issued utility patents occurs, it is expected to be by only 2%, approximately 2,000 fewer patents from a base of over 300,000. *Id.*

²⁷ *U.S. Patent Statistics Chart Calendar Years 1963-2014*, U.S. PATENT & TRADEMARK OFF., http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (last modified Mar. 9, 2016).

²⁸ *Id.*

²⁹ This calculation uses the federal definition of a business hour, which determines that there are 2,087 hours in the average work year. *See* U.S. OFF. OF PERSONNEL MGMT., *Fact Sheet: Computing Hourly Rates of Pay Using The 2,087-Hour Divisor*, <http://www.opm.gov/policy-data-oversight/pay-leave/pay-administration/fact-sheets/computing-hourly-rates-of-pay-using-the-2087-hour-divisor/> (last visited Mar. 7, 2016). The number of hours is based on a forty-hour work week, and does not include vacation or sick time. *Id.* Additionally, the formula determines that there are almost 261 business days in the average year. *See id.*

Dividing the 300,000 patents by 2,087 gives just under 144 per hour. Looking at the inverse, this would give someone approximately twenty-five seconds to read and understand each patent. Since the federal figure excludes things like vacation time, the task would actually be more difficult than this calculation shows.

³⁰ There are 8,760 clock-hours in a non-leap year (365 days times twenty-four hours).

³¹ Sisyphus, a Greek mythological character, was ordered by Hades to repeatedly roll a heavy boulder up a hill, only to see it roll back down as soon as he reached the summit. “In modern usage, a Sisyphean task is one that is exhausting,

continued . . .

Some relief could be had by hiring more patent attorneys to do the work; after all, if one attorney would have to process 144 patents in an hour, two would cut that number in half to 72 patents an hour, four to 36 an hour, and so on. Ultimately, however, throwing more bodies at the problem is also likely destined to fail.³² As Dr. Brooks demonstrates, adding labor only shortens complicated tasks somewhat as additional time will be needed to coordinate the work of the larger workforce.³³ More significantly, extra labor can result in the overall project failing as the complex interactions involved in the project become significantly less likely to be detected.³⁴ Although there are obvious differences between designing large-scale computer systems and reading and understanding massive numbers of patents,³⁵ both seem equally technologically complex since neither will succeed in the absence of complete information flow. The point, after all, is not just to read patents; it is to read, understand, and apply them to a company's developing product line, including appreciating how multiple patents interface with each other.

Another way the above estimates may slightly overstate the problem is that not all companies are involved in a multitude of industries;³⁶ indeed, some companies, particularly new start-up companies, may be involved with a single major project. Even with that limitation, however, if the company is involved with any leading technology, there would still be over 5,200 new patents a year to read and absorb on average.³⁷ This equates with reading and understanding two and a half

unceasing, and, ultimately, aimless." LUKE ROMAN & MONICA ROMAN, *ENCYCLOPEDIA OF GREEK AND ROMAN MYTHOLOGY*, 443–44 (2010).

³² See FREDERICK P. BROOKS, JR., *THE MYTHICAL MAN-MONTH: ESSAYS ON SOFTWARE ENGINEERING* 25 (2d ed. 1995) ("Oversimplifying outrageously, we state Brooks's Law: *Adding manpower to a late software project makes it later.*") (emphasis added). Similarly, throwing more patent attorneys at the problem of reading and understanding patents could result in a greater amount of work. See *id.* at 13–19.

³³ See *id.* at 17 ("In tasks that can be partitioned, but which require communication among the subtasks, the effort of communication must be added to the amount of work to be done.").

³⁴ See *id.* at 18–19, 212.

³⁵ See *id.* at vii ("In many ways, managing a large computer programming project is like managing any other large undertaking—in more ways than most programmers believe.").

³⁶ But see *All Products*, GEN. ELEC. CORP., <http://www.ge.com/products> (last visited Mar. 7, 2016) (describing twenty-six product categories); *Products for Business and Consumers*, 3M CORP., http://www.3m.com/3M/en_US/company-us/ (last visited Mar. 7, 2016) (describing thirty-two business and seven consumer product categories).

³⁷ The average number of new patents issued in 2014 for the fifty most popular art units was 5,257. See *Part II, Patent Counts by Class By Year*, U.S. PATENT &

continued . . .

patents per business hour, every hour, every day.³⁸ Further, most products are built from technologies that are protected by more than one class of patents, which could greatly increase the number of patents that must be processed and understood.³⁹

C. The Result: Market-Driven Patent System Fails

Consequently, it has become a practical impossibility for a company to protect itself against infringing patents by a regularized comprehensive review of issued patents. Even the “good actors” in the marketplace cannot reasonably be expected to know the technology disclosed in the 3 million active patents, much less keep track of the new disclosures in the 300,000 annually issued new patents.⁴⁰ Unfortunately, the patent system continues to operate with this expectation. In *In re Seagate Technology, LLC*, for example, the Federal Circuit noted that willfulness on the part of an accused infringer is not needed to establish liability, but it does serve to give the court the right to enhance damages that are to be paid for the infringement.⁴¹ The determination of willfulness is not simple; indeed, the Federal Circuit has identified nine factors that are relevant to the determination:

- (1) [W]hether the infringer deliberately copied the ideas or design of another;
- (2) whether the infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed;
- (3) the infringer's behavior as a party to the litigation . . .
- (4) [d]efendant's size and financial condition . . .
- (5) [c]loseness of the case . . .
- (6) [d]uration of defendant's misconduct . . .
- (7) [r]emedial action by the defendant . . .
- (8) [d]efendant's

TRADEMARK OFF.,

<http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cbcby.htm#PartA2> (last visited Mar. 7, 2016) [hereinafter *USPTO Patent Counts*]. If the company were involved with the most commonly triggered art class—257: active solid-state devices—there would have been 15,581 patents to digest. *Id.*

³⁸ 5,200 divided by 2,087. For the most popular art class, 257, approximately seven and a half patents would need to be processed every hour.

³⁹ Consider the television. Its broad art class is 348, the tenth most common class in 2014. At the same time, seven of the remaining top ten classes could easily impact the design of a new TV. Only the seventh and eighth categories, drugs (514) and molecular biology (435), are completely separate from television technology. Almost 90,000 patents are indexed under the eight TV-relevant classes. See *USPTO Patent Counts*, *supra* note 37.

⁴⁰ See Crouch, *supra* note 25; Crouch, *USPTO Grants*, *supra* note 26.

⁴¹ *In re Seagate Tech., LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007). See also 35 U.S.C. § 284 (2012) (authorizing treble damages).

motivation for harm . . . (9) [w]hether defendant attempted to conceal its misconduct.⁴²

Under this test, it is questionable if a defendant can avoid a finding of willfulness and its consequential multiple damages if its explanation of how the infringement occurred was that searching existing and newly issued patents was impractical.⁴³ “Ostrich-like” behavior can be evidence of willfulness.⁴⁴ Consequently, although the explosion in the number of potentially relevant patents renders the search task a practical impossibility, companies must nevertheless attempt it or could be found reckless and thus subject to multiple damages.⁴⁵ With the number of issued patents in existence, there is “an objectively high likelihood”⁴⁶ that at least one of them will read onto any new product, thereby mandating an expensive, but fruitless search for something that is unlikely to be found. Alternatively, of course, the current system could be changed to resolve the Hobson’s choice between expensively attempting to conduct an impossible search or “willfully” failing to engage in a futile effort, only to have multiple damages awarded as a result.

The kinds of failure being discussed here are not without precedent as another intellectual property system has faced similar issues: copyright law. In a variety of copyright areas, both statutory and societal solutions to similar market failures have been developed.⁴⁷ The next section will explore the major solutions that have been applied in copyright law. Following this, some common themes will be extracted in order to propose techniques that can help resolve the failures of the patent system being discussed in this article.

⁴² *Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1225 (Fed. Cir. 2006) (citing *Read Corp. v. Portec Inc.*, 970 F.3d 816, 826–27 (Fed. Cir. 1992)).

⁴³ *See id.* (imposing an affirmative duty on the infringer to investigate the scope of another’s patent once the infringer has knowledge of the patent’s existence).

⁴⁴ *Cf. Metso Minerals, Inc. v. Powerscreen Int’l Distrib., Ltd.*, 526 F. App’x 988, 998 (Fed. Cir. 2013) (noting that the district court’s finding that the defendant “evinced ostrich-like, head-in-the-sand behavior” could justify a willfulness finding, but nevertheless overturning the district court on its finding of infringement (quoting *Metso Minerals, Inc. v. Powerscreen Int’l Distrib. Ltd.*, 833 F. Supp. 2d 282, 307 (E.D.N.Y. 2011))).

⁴⁵ *See In re Seagate*, 497 F.3d at 1371 (“[W]e . . . hold that proof of willful infringement permitting enhanced damages requires at least a showing of objective recklessness . . . Accordingly, to establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent.”).

⁴⁶ *Id.*

⁴⁷ *See infra* Part III.A–E.

III. COMPULSORY AND SITE LICENSING UNDER COPYRIGHT LAW

The examples from copyright law addresses the use and distribution of music and how it addresses performances, particularly those that occur through the electronic media. Primarily, these special copyright rules were established either because individualized license negotiations to use the expressive work would be impractical⁴⁸ or because market power between the author and the users of the work was significantly out of balance in a way that would prevent the appropriate dissemination of the work.⁴⁹ Copyright law, after all, has to deal with a significantly higher number of works than are claimed under the patent law.⁵⁰ In each case, Congress attempted to establish a specialized balance for the compensation of authors that differs from that which would occur if the market were allowed to operate without special rules.⁵¹ Examining these rules briefly will provide the background for a similar specialized balancing provision for patents.

A. The Jukebox Provision—17 U.S.C. § 116

Copyright royalty payments for music played on a jukebox have special rules in the Code.⁵² Under the system in force today, direct

⁴⁸ See, e.g., H.R. REP. NO. 94-1476, at 89 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5704 (“In general, the Committee believes that cable systems are commercial enterprises whose basic retransmission operations are based on the carriage of copyrighted program material and that copyright royalties should be paid by cable operators to the creators of such programs. The Committee recognizes, however, that it would be impractical and unduly burdensome to require every cable system to negotiate with every copyright owner whose work was retransmitted by a cable system.”). See also Christian Handke, *Joint Copyrights Management by Collecting Societies and Online Platforms: An Economic Analysis* 4–6 (June 9, 2015), available at <http://ssrn.com/abstract=2616442>.

⁴⁹ See, e.g., H.R. REP. NO. 94-1476, at 117 (“The Committee is cognizant of the intent of Congress, in enacting the Public Broadcasting Act on November 7, 1967, that encouragement and support of noncommercial broadcasting is in the public interest. It is also aware that public broadcasting may encounter problems not confronted by commercial broadcasting enterprises, due to such factors as the special nature of programming, repeated use of programs, and, of course, limited financial resources. Thus, the Committee determined that the nature of public broadcasting does warrant special treatment in certain areas.”).

⁵⁰ See U.S. COPYRIGHT OFF., FISCAL 2013 ANN. REP. 13, available at <http://copyright.gov/reports/annual/2013/ar2013.pdf> (showing over 500,000 new claims for copyright registrations in each of the last five years). Of course, a registration is never sought for a vast majority of copyrighted works because registration is not a mandatory prerequisite for copyright validity. See 17 U.S.C. § 408(a) (2012).

⁵¹ U.S. COPYRIGHT OFF., *supra* note 50, at 16–17.

⁵² See 17 U.S.C. § 116 (2012). The statute uses the phrase “coin-operated

negotiation between the jukebox operator and the copyright holder⁵³ is preferred; but if they do not occur or if they fail, Copyright Royalty Judges can set rates for the license pursuant to Chapter 8 of the Copyright Act.⁵⁴

As originally enacted in the 1976 Act, jukeboxes had a more particular set of compulsory royalty provisions than the current law provides.⁵⁵ Under the original 1976 provision, an annual royalty was set for each jukebox, which was paid to the Copyright Office.⁵⁶ The money that was collected under this provision would then be distributed to copyright holders who could *prove* that their work had been performed on a jukebox.⁵⁷ Not surprisingly, “prov[ing] entitlement”⁵⁸ to royalties could be extraordinarily challenging considering that jukeboxes are distributed throughout the United States, and are often in locations that are not readily available for copyright holders to inspect.⁵⁹

Despite the practical difficulties, the initially enacted compulsory license for jukeboxes was a step forward for music copyright holders, as the 1909 Copyright Act provided no compensation for copyright holders when a work was performed on a jukebox.⁶⁰ Indeed, the market disturbance that Congress was attempting to correct with the jukebox compulsory license provision in the 1976 Copyright Act was the very fact that no compensation was being provided to holders of music copyrights when the works were played on a jukebox.⁶¹ The drafters of

phonorecord player” as a synonym for a jukebox. *Id.*

⁵³ This would include the holder of the copyright in each musical work available in the jukebox as well as the holder of the copyright in each performance.

⁵⁴ See 17 U.S.C. § 116(b). See generally *id.* §§ 801–05 (2012) (creating Copyright Royalty Judges and establishing the compulsory royalty rate setting procedures). The rates established are published at: Compulsory License Fees for Coin-Operated Phonorecord Players, 37 C.F.R. § 254.3 (2015). Since the 1990s, a privately negotiated set of rates has been in force. *Id.*

⁵⁵ See Copyright Act of 1976, Pub. L. No. 94-553, § 116, 90 Stat. 2541, 2564 (codified as amended at 17 U.S.C. § 116 (2012)).

⁵⁶ See 17 U.S.C. § 116(b) (2012).

⁵⁷ Costs incurred by the Copyright Office and the Royalty Tribunals were to be deducted from the amounts collected. See *id.* § 116(c)(1)-(4).

⁵⁸ *Id.* § 116(c)(4)(A)-(B).

⁵⁹ See 2 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 8.17(B)(7) (2014).

⁶⁰ Copyright Act of 1909, Pub. L. No. 60-349, § 1(e), 35 Stat. 1075, 1075–76 (“The reproduction or rendition of a musical composition by or upon coin-operated machines shall not be deemed a public performance for profit unless a fee is charged for admission to the place where such reproduction or rendition occurs.”), *repealed by* Copyright Act of 1976, Pub. L. No. 94-553, § 116, 90 Stat. 2541, 2564 (codified as amended at 17 U.S.C. § 116 (2012)).

⁶¹ See H.R. REP. NO. 94-1476, at 89 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5728 (“The present blanket jukebox exemption should not be continued.

the 1976 Act determined that the step from requiring no compensation by the jukebox industry to requiring normal, fully negotiated copyright compensation was too extreme, so a compulsory license was appropriate.⁶² There was also a practical problem of the number of negotiations that would be necessary as the jukeboxes of the era could each store one-hundred distinct songs.⁶³

B. The Cable Television Provision—17 U.S.C. § 111

The provisions of section 111 grant compulsory licenses that allow, among other similar uses,⁶⁴ a cable television company to rebroadcast over-the-air television signals to its subscribers.⁶⁵ The basic system establishes royalty rates, which are paid by the cable company based on its gross receipts from its subscribers.⁶⁶ Subsequently, any copyright

Whatever justification existed for it in 1909 exists no longer, and one class of commercial users of music should not be completely absolved from liability when none of the others enjoys any exemption.”). Of course, by the time the fix was made, jukeboxes were no longer as important in the distribution as they had been through the middle of the twentieth century. See TAYLOR COWEN, IN PRAISE OF COMMERCIAL CULTURE 164–66 (2000) (noting that three-fourths of the records produced in the 1940s were used in jukeboxes); *The Jukebox, it Seems, Is a Hit of the Past*, N.Y. TIMES (July 21, 1982), <http://www.nytimes.com/1982/07/21/garden/the-jukebox-it-seems-is-a-hit-of-the-past.html> (noting a decline in the number of jukeboxes by more than fifty percent from the early 1950s to the 1980s). See also KERRY SEGRAVE, JUKEBOXES: AN AMERICAN SOCIAL HISTORY 164–66 (2002) (discussing the same).

⁶² See H.R. REP. NO. 94-1476, at 89 (“Unlike other commercial music users, who have been subject to full copyright liability from the beginning and have made the necessary economic and business adjustments over a period of time, the whole structure of the jukebox industry has been based on the existence of the copyright exemption.”).

⁶³ See *Seeburg Select-O-Matic Jukebox*, VINTAGE VENDING (Aug. 1, 2008), <http://www.vintagevending.com/seeburg-select-o-matic-jukebox>.

⁶⁴ This section of the Copyright Act of 1976 is among its most complex provisions. See *Am. Broad. Co., Inc. v. Aereo, Inc.*, 134 S. Ct. 2498, 2506 (2014) (“Section 111 creates a complex, highly detailed compulsory licensing scheme that sets out the conditions, including the payment of compulsory fees, under which cable systems may retransmit broadcasts.”); H.R. REP. NO. 94-1476, at 88 (“The complex and economically important problem of ‘secondary transmissions’ is considered in section 111. For the most part, the section is directed at the operation of cable television systems . . . [h]owever, other forms of secondary transmissions are also considered, including apartment house and hotel systems, wired instructional systems, common carriers, nonprofit ‘boosters’ and translators, and secondary transmissions of primary transmissions to controlled groups.”).

⁶⁵ See 17 U.S.C. § 111(a)(3) (2014). For the current rates, see *Adjustment of Royalty Fees for Secondary Transmissions by Satellite Carriers*, 37 C.F.R. § 386.2(b) (2015).

⁶⁶ See 17 U.S.C. § 111(d)(1) (2012). Royalty rates are determined based on

continued . . .

holder who claims to have a work that was rebroadcast must make a claim for compensation by filing a claim under the Copyright Royalty system set forth in Chapter 8 of the Copyright Act and can be awarded a proportionate share of the revenues collected.⁶⁷ Again, as was the case with jukeboxes, if the parties claiming royalties can agree on how the money should be distributed, Congress supports that agreement.⁶⁸

The cable television compulsory royalties system initially was made necessary by the failure of the Copyright Act of 1909 to require cable systems to provide any compensation for the rebroadcast of the signals.⁶⁹ After making the determination that cable television providers should pay royalties, the lack of such a requirement under the 1909 Act suggested that transitional provisions, rather than immediately using an open market system, would be necessary.⁷⁰ Beyond the transitional issue, there was congressional doubt that retransmission royalties could be adequately addressed by the open market:

The Committee recognizes . . . that it would be impractical and unduly burdensome to require every cable system to negotiate with every copyright owner whose work was retransmitted by a cable system. Accordingly, the Committee has determined . . . to establish a compulsory copyright license for the retransmission of those over-the-air broadcast signals that a cable system is authorized to carry pursuant to the rules and regulations of the FCC.⁷¹

C. The “Cover” of a Music Performance Provision—17 U.S.C. § 115

Under section 115, a performer is granted a compulsory license for making a phonorecord⁷² of a copyright-protected musical work as long

subscribers who are not physically within the range of the normal broadcast signal. *See id.* § 111(d)(1)(B).

⁶⁷ *See id.* § 111(d)(4)(B).

⁶⁸ *See id.* § 111(d)(4)(A).

⁶⁹ *See* H.R. REP. NO. 94-1476, at 89.

⁷⁰ *See* 17 U.S.C. § 111 (2012).

⁷¹ H.R. REP. NO. 94-1476, at 89.

⁷² “Phonorecord” is defined under the Copyright Act to mean, “material objects in which sounds, other than those accompanying a motion picture or other audiovisual work, are fixed by any method now known or later developed, and from which the sounds can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.” 17 U.S.C. § 101 (2012). *See also* London-Sire Records, Inc. v. Doe 1, 542 F. Supp. 2d 153, 170–71 (D. Mass. 2008) (“The Copyright Act thus does not use materiality in its most obvious sense—to

as that work has already been performed on a phonorecord.⁷³ A prior phonorecord-captured performance authorized by the copyright holder is a prerequisite, and no compulsory license is available for music that has not been rendered on a phonorecord with the copyright holder's consent.⁷⁴

Unlike the two compulsory licenses discussed above, this license existed under the 1909 Act.⁷⁵ Congress continued the license after determining that it was needed to appropriately balance the market for recorded music.⁷⁶ The modified license found in the 1976 Act clarified some aspects of its applicability⁷⁷ and made it subject to the royalty determination provisions in the 1976 Act that allowed for non-legislative modifications of the rates.⁷⁸ This continues today under the procedures established in Chapter 8 of the Copyright Act.⁷⁹ As is typical, however, Congress expressly supports private understandings about copyright compensation and gives a private agreement preference over Chapter 8 defined rates.⁸⁰

D. The Non-Profit Broadcast Entity—17 U.S.C. § 118

Public broadcasters are given a compulsory license to use published non-dramatic musical, pictorial, graphic and sculptural works in Section 118 of the Copyright Act.⁸¹ Royalties for use are set by Copyright

mean a tangible object with a certain heft, like a book or compact disc. Rather, it refers to materiality as a medium in which a copyrighted work can be 'fixed.'").

⁷³ See 17 U.S.C. § 115(a)(1) (2012); H.R. REP. NO. 94-1476, at 107 ("Under [Section 115], . . . a musical composition that has been reproduced in phonorecords with the permission of the copyright owner may generally be reproduced in phonorecords by another person, if that person notifies the copyright owner and pays a specified royalty."). The current defined royalties can be found at Royalty Rates for Making and Distributing Phonorecords. 37 C.F.R. § 385.3(a) (2015).

⁷⁴ See 17 U.S.C. § 115(a)(1) (2012).

⁷⁵ See Copyright Act of 1909, Pub. L. No. 60-349, § 1(e), 35 Stat. 1075, 1075-76 (repealed 1976).

⁷⁶ Cf. H.R. REP. NO. 94-1476, at 107 (citing H.R. REP. NO. 83, 90th Cong., at 66-67 (1967), which discussed the dispute between maintaining the license to support the existing market for recorded music while acknowledging that "the special antitrust problems existing in 1909" no longer existed).

⁷⁷ See *id.* at 107-08.

⁷⁸ See 17 U.S.C. § 115(c)(3)(C) (2012).

⁷⁹ See *id.*

⁸⁰ See *id.* § 115(c)(3)(B). The reality today is that compulsory license royalty rates serve as a cap as most music performances that cover prior works are negotiated. See 2 NIMMER & NIMMER, *supra* note 59, § 8.04(I).

⁸¹ See 17 U.S.C. § 118(c) (2012). Currently defined rates can be found at: Use of Certain Copyrighted Works in Connection with Noncommercial Educational Broadcasting, 37 C.F.R. § 381 (2015).

Royalty Judges under Chapter 8.⁸²

This license is the one that is most directly designed to satisfy a need for the distribution of copyrighted works because it is in the public interest even though market economics may prevent this from happening:

The Committee is cognizant of the intent of Congress, in enacting the Public Broadcasting Act on November 7, 1967, that encouragement and support of noncommercial broadcasting is in the public interest. It is also aware that public broadcasting may encounter problems not confronted by commercial broadcasting enterprises, due to such factors as the special nature of programming, repeated use of programs, and, of course, limited financial resources. Thus, the Committee determined that the nature of public broadcasting does warrant special treatment in certain areas.⁸³

⁸² See 17 U.S.C. § 118(b)(4) (2012). In the typical arrangement, a private agreement will be enforced over the rates set by the Royalty Judges. See *id.* § 118(b)(4); *id.* § 118(c).

⁸³ H.R. REP. NO. 94-1476, at 117 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5732.

E. Performing Rights Organizations—Collective Site Licenses

Performing Rights Organizations such as ASCAP⁸⁴ and BMI⁸⁵ allow musicians to collect royalties where it would otherwise be difficult or impossible.⁸⁶ Equally, the organizations allow facilities such as concert halls to lessen the likelihood that performance of a copyrighted work at the facility will be infringing because the catalog of works held by the organizations is quite broad.⁸⁷ Each organization negotiates a license agreement with entities that commonly use multiple copyrighted works, such as night clubs, concert halls, radio and television broadcasters, etc.⁸⁸ By entering into the license agreement, the entity is given a site license to use all compositions within the ASCAP or BMI catalog of music.⁸⁹ For example, if a musical group performs a copyrighted song in a performance at a concert hall, the hall itself will not be considered an infringer, as it will have a license for the performance; otherwise, the hall could have copyright liability regardless of the responsibilities of the musicians.⁹⁰ The compensation that is paid to the Performing Rights Organization is distributed to the

⁸⁴ See *What is ASCAP?*, ASCAP, <http://www.ascap.com/about/> (last visited Mar. 7, 2016) (“[T]he American Society of Composers, Authors and Publishers (ASCAP) [is] a membership association of more than 525,000 US composers, songwriters, lyricists and music publishers of every kind of music We protect the rights of ASCAP members by licensing and distributing royalties for the non-dramatic public performances of their copyrighted works.”).

⁸⁵ See *generally Our Role*, BMI, <http://www.bmi.com/about> (last visited Mar. 7, 2016) (“BMI supports businesses and organizations that play music publicly by offering blanket music licenses that permit them to play more than 10.5 million musical works.”).

⁸⁶ *Cf., e.g., Broad. Music, Inc. v. McDade & Sons, Inc.*, 928 F. Supp. 2d 1120, 1124 (D. Ariz. 2013).

⁸⁷ See *id.*

⁸⁸ See *ASCAP Music License Agreements and Reporting Forms*, ASCAP, <http://www.ascap.com/licensing/licensefinder> (last visited Mar. 7, 2016) (listing the different types of entities for which a license is available); *Music Users: Apply for your BMI Music License*, BMI, <http://www.bmi.com/licensing> (last visited Mar. 7, 2016) (listing some types of entities and allowing for the search for others).

⁸⁹ See *ASCAP Licensing: Frequently Asked Questions: What does the ASCAP license do?*, ASCAP, <http://www.ascap.com/licensing/licensingfaq.aspx#general> (last visited Mar. 7, 2016); *Licensing FAQ: What does a business really get with a BMI Music License?*, BMI, <http://www.bmi.com/licensing> (last visited Mar. 7, 2016).

⁹⁰ See, e.g., *Broad. Music, Inc. v. Niro's Palace, Inc.*, 619 F. Supp. 958, 961 (N.D. Ill. 1985) (“Copying can take many forms. The most straightforward type of copying is the public performance of another's musical composition. Moreover, not only is the performer liable for infringement, but so is anyone who sponsors the performance.”) (internal citation omitted).

actual copyright holders by the organization.⁹¹

IV. THE UNIFYING CONCEPTS BEHIND THE COPYRIGHT COMPULSORY AND PERFORMING RIGHTS LICENSES AND THE MATCHING THEMES IN MODERN PATENT PRACTICE THAT JUSTIFY DEVELOPING SIMILAR MANDATORY PATENT LICENSES

When the licensing methodologies discussed in part III above are analyzed, several common concepts emerge, most of which are applicable to solving issues arising in modern patent use. These themes segment into four major areas: (1) open market negotiations not being a realistic expectation; (2) enforcement against infringement being at best problematic, or at worst impossible; (3) an holder's assertion of intellectual property rights is overly self-centered, imposing costs that are significantly higher than the value returned by the work's creation; and (4) a need to protect a newly created market for a developing kind of work. Each of these will be discussed in turn.

A. Expecting the Parties to Engage in an Open Market Negotiation is not Realistic

The most common theme that interconnects the five copyright compulsory or collective site licenses is that a face-to-face negotiation for the rights to use a particular kind of copyrighted work is often not practical. For jukeboxes, it would be impractical to expect the operator of each box to discuss royalty payments with every artist represented on a record within the box as over 100,000 songs can now be found on a modern jukebox.⁹² A similar, but more complex problem is raised by a cable television system's rebroadcast of a show, as each show could involve independently owned and controlled copyrights in the dramatic script and its performance as well as the music and other copyrighted works that are incorporated.⁹³ For both record covers and nonprofit

⁹¹ See *ASCAP Payment System: Introduction*, ASCAP, <http://www.ascap.com/members/payment/> (last visited Mar. 7, 2016); *How We Pay Royalties: General Royalty Information*, BMI, http://www.bmi.com/creators/royalty/general_information (last visited Mar. 7, 2016).

⁹² See 17 U.S.C. § 114 (2012). See also *Rock-Ola Bubbler Nostalgic Music Center*, BMI GAMING.COM, <http://www.bmigaming.com/games-jukebox-digital.htm> (last visited Mar. 7, 2016) (describing ability of digital jukebox to hold 125,000 songs). As a result, multiple negotiations might be needed for each song because both the rights of the music copyright and performance copyright can be affected.

⁹³ See Fara Daun, Comment, *The Content Shop: Toward an Economic Legal Structure for Clearing and Licensing Multimedia Content*, 30 LOY. L.A. L. REV. 215, 215–18 (1996) (discussing the copyright issues raised by multimedia). See also

uses, the negotiation difficulty is a result of inherent market imbalances as neither a typical singer nor a public broadcasting system can obtain the copyright clearances needed to function because of their limited financial means.⁹⁴ Finally, for performance venues, negotiating for permission for each song that is going to be performed would be impractical; after all, the venue may not even know in advance what songs are going to be performed by a performer.⁹⁵

The inability to negotiate is typical in the modern patent system as well. As discussed in Part II above, patent enforcement is no longer based on the reading on process that theoretically underlies the system as doing so is no longer practical.⁹⁶ Whether the root cause of this transformation is based on the overwhelming quantity of patents being issued or on market players' decisions to use their patent portfolios in ways not designed by the law does not matter, as the reality is that open market negotiations for most patents is an unrealistic expectation.⁹⁷

B. Enforcing Against Infringement is Problematic

A second common theme that ties copyright licenses together is that practical enforcement of rights is often difficult to impossible. For example, the holder of the rights to a song or its performance may find it close to impossible to know if those rights are infringed by a jukebox located in a private club, or by a concert given in a church recreation hall.⁹⁸ First, few copyright holders have the resources to survey all of the possible infringers around the country.⁹⁹ Even if the copyright

Stacey M. Byrnes, *Copyright Licenses, New Technology and Default Rules: Converging Media, Diverging Courts?*, 20 LOY. L.A. ENT. L. REV. 243, 244–46 (2000) (discussing difficulty of determining whether a new use is authorized under an earlier license).

⁹⁴ See H.R. REP. NO. 94-1476, at 117 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5732 (noting financial limitations on public broadcasting). See also Daun, *supra* note 93, at 232 (discussing covers).

⁹⁵ See Daun, *supra* note 93, at 262 (discussing blanket licenses).

⁹⁶ See generally Brad Plumer, *Software Patents are Impractical—Unless We've got 2 million Extra Lawyers*, WASH. POST (Mar. 9, 2012), https://www.washingtonpost.com/blogs/ezra-klein/post/software-patents-are-impractical--unless-weve-got-2-million-extra-lawyers/2012/03/09/gIQRerW1R_blog.html.

⁹⁷ As is discussed in more depth below, pioneering patents that develop a new technology require separate consideration.

⁹⁸ *ASCAP Payment System: Keeping Track of Performances*, ASCAP, <http://www.ascap.com/members/payment/keepingtrack.aspx> (last visited Mar. 7, 2016).

⁹⁹ *Id.* (explaining the difficulty in determining copyright use); *ASCAP Payment System: The ASCAP Surveys*, ASCAP, <http://www.ascap.com/members/payment/surveys.aspx> (last visited Mar. 7, 2016)

continued . . .

holder could locate every jukebox that contains a phonorecord of a copyrighted song or performance, infringement does not occur until the phonorecord is played,¹⁰⁰ which could be at any hour of the day or night. Mere possession of a legitimate phonorecord does not constitute infringement.¹⁰¹ Similarly, a concert in a church hall may only be open to members of the church and never be advertised to the public, yet it remains an infringing “public performance” under the Copyright Act.¹⁰² The use of mandatory royalties and collective societies cannot eliminate these problems of enforcement, particularly by smaller entities, but can significantly limit the problem among more commercial users of copyrighted music.

In many patent-intensive industries, similar enforcement problems occur. For software- or business method-based inventions, in particular, it can be difficult or impossible to know whether a competitor is using a claimed invention, as it is likely to be incorporated into a complex software system or hidden in the back-office business processing of a company.¹⁰³ For software, although it is theoretically possible to reverse engineer a computer program to determine how it is designed and whether it practices a patented invention, the reality is often different. In the best of circumstances, reverse-engineering software is technologically challenging,¹⁰⁴ but even if it should prove possible, many products are distributed using purported licensing agreements that

(noting the same).

¹⁰⁰ 17 U.S.C. § 501(a) (2012) (explaining that infringement occurs when any exclusive rights of the copyright holder, provided in section 106, are violated); 17 U.S.C. § 106(6) (2012) (listing the right to play a phonorecord as an exclusive right of the copyright holder).

¹⁰¹ See 17 U.S.C. § 106(1) (2012) (listing the reproduction of a phonorecord as copyright infringement). See also 17 U.S.C. § 106(4) (listing the public performance of a phonorecord as copyright infringement); 17 U.S.C. § 503(a)(1)(A) (2012) (authorizing seizure and destruction of an unauthorized phonorecord; *Jalbert v. Grautski*, 554 F. Supp. 2d 57, 68 (D. Mass. 2008) (explaining that it is the “distribution of copies of a work to the public” that constitutes copyright infringement under 17 U.S.C. § 106 (2012))).

¹⁰² A performance is considered public under the Copyright Act when it is “perform[ed] . . . at a place open to the public or *at any place where a substantial number of persons outside of a normal circle of a family and its social acquaintances is gathered.*” 17 U.S.C. § 101 (2012) (emphasis added). As a non-human, churches have no family or social acquaintances. Cf. *Columbia Pictures Ind., Inc. v. Redd Horne, Inc.*, 749 F.2d 154 (3d Cir. 1984).

¹⁰³ See *Business Method Patents*, IPWATCHDOG, <http://www.ipwatchdog.com/patent/business-method-patents/> (last visited Mar. 7, 2016).

¹⁰⁴ See Mathew Schwartz, *Reverse-Engineering*, COMPUTERWORLD (Nov. 12, 2001, 12:00 AM PT), <http://www.computerworld.com/article/2585652/app-development/reverse-engineering.html>.

prohibit reverse-engineering from being attempted,¹⁰⁵ making an attempt to discover potential infringement a breach of contract. For business-based patents, the problem can be even more intractable. Some business patents are practiced in front of the customer, potentially allowing the technology to be observed—for example, one can see how French fries are prepared at most fast food restaurants—but others are completely hidden—one cannot see how a brokerage determines proxy voting rights for shares held in a street name without access to the company’s back office.

C. Avoiding Excessively Selfish Assertions of an Intellectual Property Right is Required

With some uses of copyrighted music, requiring a one-on-one negotiation for the use of the work will lead to circumstances that can be best described as a failure of intellectual property law to achieve its primary goal: the wide dissemination of the copyrighted work.¹⁰⁶ For example, the holder of a copyrighted musical composition may wish to prevent anyone save himself or herself to sing a copyrighted song in a public performance. Theoretically, insisting on this methodology could maximize the financial return to the holder, particularly if the composition is popular. If the public wants to hear a performance of the song, the copyright holder gains compensation for both the music and the performance rather than just the music alone.¹⁰⁷ This model of distribution, however, discounts the reality of how music tends to spread. After all, if people hear a new song that strikes their fancy, they are likely to leave “whistling the tunes and everything”¹⁰⁸ with the corresponding demand for more performances than the copyright holder can satisfy. The cover license provision in the Copyright Act works against this consequence by giving, in effect, the copyright holder only the first opportunity of releasing the song on a phonorecord but, having

¹⁰⁵ See David N. Pruitt, *Beyond Fair Use: The Right to Contract Around Copyright Protection of Reverse Engineering in the Software Industry*, 6 CHI.-KENT J. INTELL. PROP. 66 (2006). It may be that such a contractual attempt to prevent reverse-engineering by all customers constitutes an inappropriate use of state law in a way that is preempted by federal intellectual property policy. See Ralph D. Clifford, *The Federal Circuit's Cruise to Uncharted Waters: How Patent Protection for Algorithms and Business Methods May Sink the UCITA and State Intellectual Property Protection*, 73 TEMP. L. REV. 1241, 1269 (2000).

¹⁰⁶ See 1 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 1.03[A] (Matthew Bender ed., 2007).

¹⁰⁷ See 17 U.S.C. § 115(c)-(d) (2012).

¹⁰⁸ PETER SCHICKELE, “Unbegun” *Symphony*, on AN HYSTERIC RETURN P.D.Q. BACH AT CARNEGIE HALL (Vanguard Records 1966).

done so, all others may also, paying the copyright holder what is determined to be a fair royalty for the privilege of using the underlying music.¹⁰⁹

In the world of patents, this overly selfish assertion of rights is also seen. As a primary example, a patent holder can exercise a patent to prevent all others from making, using or selling the patented invention even though the holder is not planning on using the invention.¹¹⁰ In effect, the patent holder is using the patent to injure others by preventing their use of the invention for no return.¹¹¹

The early days of the electronics industry serve as an example of how the strong assertion of patent rights can have a significantly negative effect on the development of a technology. John Fleming, the first individual to obtain a patent in what became the electronics space, was granted a patent on the vacuum-tube diode.¹¹² Less than two years later, Lee de Forest was issued a patent on the vacuum-tube triode.¹¹³ Although the triode has functions that are quite different than the diode—fundamentally, a diode transforms electricity from alternating to direct form while a triode can amplify signals¹¹⁴—a triode can also be used as a diode and, more critically, a triode reads on to the Fleming diode patent.¹¹⁵ Unfortunately, both Fleming and de Forest strongly asserted their patents, resulting in a significant delay in the development of electronic technology as no one could safely license the technology from either of the parties.¹¹⁶

Today, the use of a patent to prevent anyone from using a technology has been associated strongly with a “patent troll,” often now

¹⁰⁹ See 17 U.S.C. § 115(a) (2012).

¹¹⁰ See 35 U.S.C. § 271(d) (2012).

¹¹¹ See *id.*

¹¹² U.S. Patent No. 803,684 (filed Apr. 19, 1905).

¹¹³ U.S. Patent No. 841,387 (filed Oct. 25, 1906).

¹¹⁴ See *Early Tube History*, ALL ABOUT CIRCUITS,

<http://www.allaboutcircuits.com/textbook/semiconductors/chpt-13/early-tube-history/> (last visited Mar. 7, 2016) (describing the diode); *The Triode*, ALL ABOUT CIRCUITS, <http://www.allaboutcircuits.com/textbook/semiconductors/chpt-13/the-triode/> (last visited Mar. 7, 2016) (describing the triode); see also *Radio Corp. of Am. v. Radio Eng'g Labs., Inc.*, 293 U.S. 1, 10–11 (1934) (discussing the use of both devices for capturing and producing radio waves).

¹¹⁵ See *Marconi Wireless Tel. Co. of Am. v. De Forest Radio Tel. & Tel. Co.*, 243 F. 560, 565 (2d Cir. 1917). See also Deepa Varadarajan, *Improvement Doctrines*, 21 GEO. MASON L. REV. 657, 688 (2014) (discussing how an earlier “blocking” patent can prevent use of an improvement patent).

¹¹⁶ See Peter E. Mayeux, *Fleming, Sir John Ambrose 1849–1945 British Electrical Engineer; Inventor of the Vacuum Tube*, 2 ENCYCLOPEDIA OF RADIO 972 (Christopher H. Sterling ed., 2004) (“Litigation of the de Forest and Fleming patents continued for years. Court decisions in 1916 tied most companies into knots.”).

called a “non-practicing entity” or “NPE.”¹¹⁷ What is being identified in this article, however, is narrower than a NPE; instead, a distinction is being made between a NPE that actively seeks to allow others to use a patented invention by entering into license agreements¹¹⁸ and one that seeks to prevent a technology from being used although no attempts are made to market the technology. Where patent rights are used solely to prevent use rather than to enable it, the “licensing” protocol equates to the third theme underlying copyright compulsory licenses.¹¹⁹

D. Protecting a Newly Emerging Market

The final common theme that underlies these copyright licenses is the need to respond to a newly developing market. Sometimes this new market for copyrighted works was a result of the prior law leaving the use free from copyright restrictions.¹²⁰ Other times, the market developed because of a novel technology.¹²¹ In both cases, Congress determined that an open, one-on-one negotiation between the copyright holders and the new users would be ruinous to the development of the newly emerging distribution method.¹²²

The primary example of a market being protected is the jukebox provision in the 1976 Copyright Act.¹²³ The 1909 Act left the use of music by a jukebox completely free from copyright limitations.¹²⁴ Congress felt that the transition from not having to pay any compensation to having to negotiate a royalty provision for each song was likely to cause the extinction of the jukebox industry.¹²⁵

A good example of the second type of market-protection need is shown by the cable television provisions.¹²⁶ This industry was developing at the time the 1976 Act was being crafted.¹²⁷ Congress was fearful that the parties controlling copyrighted works on the existing broadcast media would be likely to prevent the use of their copyrights

¹¹⁷ See, e.g., Kristen Osenga, *Formerly Manufacturing Entities: Piercing the “Patent Troll” Rhetoric*, 47 CONN. L. REV. 435, 437–41 (2014).

¹¹⁸ For example, most universities would fit into this category. See Mark A. Lemley, *Are Universities Patent Trolls?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 611 (2008).

¹¹⁹ See *infra* Part IV.D.

¹²⁰ See *supra* Part III.A.

¹²¹ See *supra* Part III.B.

¹²² See H.R. REP. NO. 94-1476, at 89 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5728.

¹²³ See 17 U.S.C. § 116 (2012); *supra* Part III-A.

¹²⁴ See *supra* note 60.

¹²⁵ See *id.*

¹²⁶ See 17 U.S.C. § 111 (2012); *supra* Part III-B

¹²⁷ See *supra* Part III-B.

by the cable industry as a way of preventing the cable industry itself from growing.¹²⁸

Unlike the first three common themes that unify the copyright mandatory license provisions, patent law differs somewhat dramatically. It is an acceptable motive, as a general matter, for the holder of a patent to use it to prevent a competitor from entering a marketplace.¹²⁹ The basic legal right given by each system explains this difference. A copyright holder has the affirmative right to use the copyrighted work;¹³⁰ a patent holder does not, and can only prevent others from using the invention.¹³¹ More fundamentally, however, is the purpose of the patent system—the development of new technology, broadly defined.¹³² As the law of patents is specifically designed to regulate the entry of new technologies into society, the overall system is not affected adversely by new inventions in the way the copyright system often is.¹³³

V. APPLYING COMPULSORY LICENSING TO PATENTS

A. Why Patent Licenses Are Needed

The current patent system does not, in general, use compulsory licenses, and patent holders—outside of a few narrow areas¹³⁴ or where

¹²⁸ See *supra* Part III-B.

¹²⁹ See generally Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 MINN L. REV. 101, 119–20 (2006) (describing the increased costs of market entry caused by the existence of invalid patents).

¹³⁰ See 17 U.S.C. § 106 (2012) (“[T]he owner of copyright under this title has the exclusive rights *to do and to authorize* any of the following”) (emphasis added).

¹³¹ See 35 U.S.C. § 154(a)(1) (2012) (“Every patent shall . . . grant to the patentee . . . *the right to exclude* others from using, offering for sale, or selling throughout the United States”) (emphasis added).

¹³² See U.S. CONST. art. 1, § 8, cl. 8 (“To promote the Progress of Science”).

¹³³ New technologies that can preserve artistic expressions have historically been responsible for causing then existing copyright provisions to become non-functional. Jessica D. Litman, *Copyright Legislation and Technological Change*, 68 OR. L. REV. 275, 276–77, 281–82 (1989). For example, piano rolls, an early form of recorded music, were not within the scope of protection found in the Copyright Act when they were first developed, leaving that version of a musical expression without copyright protection for decades. See *White-Smith Music Publ’g Co. v. Apollo Co.*, 209 U.S. 1, 13 (1908).

¹³⁴ See, e.g., Clean Air Act, 42 U.S.C. § 7608 (2012) (allowing the attorney general to require the owner of any patent that is not “reasonably available” to license the patent if such licensing is necessary to comply with certain aspects of the

required as a remedy¹³⁵—can choose when and if to authorize others to use their patented technology.¹³⁶ As discussed above, however, the current way in which businesses are using patents introduces significant problems, and results in the redefinition of the underlying principle of the patent system of rewarding disclosure with the ability to monopolize the technology.¹³⁷ Numerous articles have been written that attempt to address some of these problems.¹³⁸ It may be time to acknowledge, however, that the actors who operate the patent system, as well as those who gain its benefits, have insufficient motivation to do anything but preserve the status quo.¹³⁹ Consequently, in order to restore its operating principles, alternative mechanisms need to be explored to redirect the system to serve society's requisites. The basic thesis expressed here is that mandatory licenses patterned after the ones used in the copyright system would serve to re-equilibrate the system and, in particular, would resolve the two primary problems that were identified for solution in Part I of this paper: using patent portfolios as “haystack clubs;” and overcoming disabling numerosity.

1. *Haystack Clubs*

Using a patent portfolio, rather than individual patents, as a

Clean Air Act and if “there are no reasonable alternative methods” to achieve compliance); Atomic Energy Act, 42 U.S.C. § 2183 (2012) (granting similar authority to the Nuclear Regulatory Commission).

¹³⁵ See *United States v. Glaxo Grp., Ltd.*, 410 U.S. 52, 58–59 (1973) (acknowledging that a “demand for mandatory sales and reasonable-royalty licensing [are] well-established forms of relief when necessary to an effective remedy.”).

¹³⁶ See *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1204 (2d Cir. 1981) (“Where a patent holder, however, merely exercises his right to exclude others from making, using, or selling the invention by refusing unilaterally to license his patent for its seventeen-year term, such conduct is expressly permitted by the patent laws.” (internal citations and quotation marks omitted)); *Intergraph Corp. v. Intel Corp.*, 195 F.3d 1346, 1362–63 (Fed. Cir. 1999).

¹³⁷ See *supra* part II.A.

¹³⁸ See, e.g., Maayan Perel, *From Non-Practicing Entities (NPES) to Non-Practiced Patents (NPPS): A Proposal for A Patent Working Requirement*, 83 U. CIN. L. REV. 747 (2015); Colleen Chien, *Startups and Patent Trolls*, 17 STAN. TECH. L. REV. 461 (2014); David L. Schwartz & Jay P. Kesan, *Analyzing the Role of Non-Practicing Entities in the Patent System*, 99 CORNELL L. REV. 425 (2014); Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117 (2013).

¹³⁹ See R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2137 (2009) (“What has largely been lost in this drumbeat for improved patent quality is that the modern patent system affirmatively encourages low patent quality—the incentives at work are such that we cannot reasonably expect anything other than very large numbers of low-quality patents.” (footnote omitted)).

litigation club presents the same kind of system failure as that which justified the special copyright rules for jukeboxes and cable television. For both of these copyright systems, individual negotiations would be impractical because there are too many rights holders involved and the odds are too great that a mistake regarding coverage will result in liability.¹⁴⁰ Consequently, automatic negotiations in the form of a statutory license are used.¹⁴¹

Allowing the use of a haystack of patents causes a similar failure. Just as an operator of a jukebox or cable system cannot realistically deal with thousands of individual rights negotiations to be allowed to engage in its everyday operation, a company cannot do so when faced with hundreds or thousands of patents.¹⁴² Without a viable mechanism to determine if each of a thousand patents reads onto a company's product, the company is left with no harbor to avoid potential infringement.¹⁴³ Like the copyrighted music in a jukebox or television shows being rebroadcast by a cable system, the reality is that individual patent-by-patent analysis for the ones in a haystack portfolio is impossible.

2. *Disabling Numerosity*

While the haystack club is a tactical business approach that has been adopted to maximize the economic return from a patent portfolio—often beyond the legally justifiable return from the individual patents contained within it—numerosity is a problem inherent in the current patent system.¹⁴⁴ With 300,000 newly issued patents each year on top of the base of 3 million active patents, it has become impossible to absorb newly disclosed technology, particularly within the most innovative fields.¹⁴⁵ The most similar copyright problem is the public performance of music as there are millions of public performances of copyrighted music on an annual basis.¹⁴⁶ The primary copyright

¹⁴⁰ See Brent Skorup, *What Market Failure? The Weak Transaction Cost Argument for TV Compulsory Licenses*, THE TECHNOLOGY LIBERATION FRONT (July 31, 2015), <https://techliberation.com/2015/07/31/what-market-failure-the-weak-transaction-cost-argument-for-tv-compulsory-licenses/>.

¹⁴¹ *See id.*

¹⁴² Stefan Wagner, *Are 'Patent Thickets' Smothering Innovation?*, YALE INSIGHTS (Apr. 22, 2015), <http://insights.som.yale.edu/insights/are-patent-thickets-smothering-innovation/>.

¹⁴³ See Steven Levy, *The Patent Problem*, WIRED (Nov. 13, 2012, 6:30 AM), <http://www.wired.com/2012/11/ff-steven-levy-the-patent-problem/>.

¹⁴⁴ *Id.*

¹⁴⁵ See Crouch, *supra* note 25; Crouch, *USPTO Grants*, *supra* note 26.

¹⁴⁶ “Performance” is a term of art under the Copyright Act, and includes: “recit[ing], render[ing], play[ing], danc[ing], or act[ing] it, either directly or by means of any device or process.” 17 U.S.C. § 101 (2012). Similarly, “publicly” is

response to this is the recognition of the performing rights societies.¹⁴⁷ These groups allow one negotiation to occur which results in the authorized use of large catalogs of protected works.¹⁴⁸ The user of copyrighted music can be assured that the use of any of the multitude of works within the catalog will be authorized, including new works developed after the original negotiation with the performing rights society was concluded.¹⁴⁹

For patents, no system is available to acquire rights to use a patent by entering into a collective licensing agreement with multiple patent holders. Although this absence does not affect the licensing of all patents—a patent that pioneers a new field is particularly appropriate for one-on-one licensing—for a vast majority of them, it creates a significant impediment.¹⁵⁰ Specifically, the market value associated with the license of a patent that claims a minor advancement¹⁵¹ in a technological area should be correspondingly small. In reality, however, the value that can be claimed is greatly enlarged because of the costs associated with litigating patent rights.¹⁵²

B. How Mandatory Patent Licenses Would Work

1. Establishing Field Licenses

To implement the proposed system, there would need to be two classifications for patents. Most patents—likely the ones that add a minimal amount to the known technology—would be subject to the

defined broadly to include personal or transmitted performances to groups other than one's family and friends. *Id.* Consequently, public performances are quite common and are somewhat in conflict with a layperson's understanding of what is a public performance. *See* *Am. Broad. Cos., Inc. v. Aereo, Inc.*, 134 S. Ct. 2498, 2507–10 (2014); *Red Baron-Franklin Park, Inc. v. Taito Corp.*, 883 F.2d 275, 278–79 (4th Cir. 1989); *Columbia Pictures Indus., Inc. v. Redd Horne, Inc.*, 749 F.2d 154, 158–59 (3d Cir. 1984).

¹⁴⁷ 17 U.S.C. § 101 (2012). There is also a strong resemblance with jukeboxes. *See id.*

¹⁴⁸ *See supra* Part IV.E.

¹⁴⁹ *See id.* *See also Using Copyrighted Music*, ASCAP, <http://www.ascap.com/~media/655449c494b748ba89edc4864655e1b6.pdf> (last visited Mar. 7, 2016).

¹⁵⁰ *See* Christi J. Guerrini, *Defining Patent Quality*, 82 *FORDHAM L. REV.* 3091, 3093 (2014).

¹⁵¹ As is well recognized in the literature, many of these patents are, in fact, invalid because they are either anticipated or obvious. *See, e.g., id.* at 3092–94; Wagner, *supra* note 139, at 2138–39. The cost of licensing a non-patentable technology should be zero.

¹⁵² *See supra* note 17. For an invalid patent, any licensing fee is presumably associated with the costs of litigating the invalidity. *Cf. id.*

mandatory licensing system. This type of patent will be referred to as a “field-licensed patent.” The others that do, in fact, more significantly advance knowledge, could be excluded from the mandatory licensing system, thereby requiring an individually negotiated license. These will be termed as an “individually-licensed patent.”

The determination of which license class a patent is placed would be made by the holder of the patent rights. For the system to be effective, the decision to choose the individually-licensed class would have to be at a high enough cost that an holder would be incentivized to choose an individually-licensed patent only where significant returns should be expected because of its pioneering nature.

a. Determining Field-License Royalties

For the field-licensed patents, a neutral magistrate¹⁵³ would define a royalty rate for all patents within a particular field of technology. Once the rate for the field is established, a company could buy a license to use all of the patents within a particular field. In other words, the mandatory license would allow others to “make[], use[], offer[] to sell, or sell[]”¹⁵⁴ a product that practices anything claimed by a patent within the field upon payment of the required license fee. The fees collected for these licenses would be distributed to all who own a field-licensed patent within the relevant field. As a result, the inventor receives compensation for the use of the invention—potentially more than would have been received without this proposed licensing system functioning¹⁵⁵—thus satisfying the system’s fundamental purpose of rewarding inventors for disclosing their inventions¹⁵⁶ while giving product developers an effective safe harbor against a multitude of patent claims, whether by patent trolls or by more legitimate companies.

It is important to note that no attempt need be made to determine that a particular product reads on to a particular patent within the field or even, for that matter, whether a patent was improperly granted. If the product practices an art within the field, the mandatory license would

¹⁵³ This would presumably be an administrative judge operating a system of adjudication similar to that established in the Copyright Act. *See* 17 U.S.C. §§ 801–05 (2012).

¹⁵⁴ 35 U.S.C. § 271(a) (2012).

¹⁵⁵ In fact, most inventors are likely to receive more compensation under this system than they do now as most patents fail to achieve any financial remuneration. *See* Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSPS. 75, 75 (2005) (noting that “[m]ost issued patents turn out to have little or no commercial significance”).

¹⁵⁶ Timothy M. Murphy, *Basic Patent Law Issues*, BROMBERG & SUNSTEIN LLP, http://sunsteinlaw.com/media/PatentLawBasics_TM.pdf (last visited Mar. 7, 2016).

apply and the compensation paid for the field-license would make the use of any field-licensed patent non-infringing.

There are numerous ways that a patent's "field" could be defined for the purpose of mandatory licensing. The easiest approach would be to use the patent office's "class" definitions, which designate a patent's technological field.¹⁵⁷ For some of these classes, however, the Code covers an immense amount of technology that differs more than the single class implies.¹⁵⁸ Consequently, if considering the most commonly patented technologies, the sub-classes defined by the patent office may be more appropriate.¹⁵⁹ In contrast to this, of course, are the least popular Patent and Trademark Office ("PTO") classes where subdividing beyond the primary class definition would seem to be a colossally over defined.¹⁶⁰ Consequently, it may be more appropriate to give regulatory authority to the Patent Office to define and potentially redefine the "fields" that are used for mandatory licensing. This would allow the system to be responsive to the different sizes of each patent class as well as their relative popularity, and would allow the PTO to keep the system responsive as technology changes.

b. Electing Out of Field-Licensing

Although field-licensing would work better than the current system for most patents, an exception would be necessary for certain types of patents. When an inventor creates something in a broad field of technology—a pioneering invention—field-license compensation

¹⁵⁷ See *US Classes by Number with Title Menu*, U.S. PATENT & TRADEMARK OFF., <http://www.uspto.gov/web/patents/classification/selectnumwithtitle.htm> (last modified July 10, 2012, 11:08 AM) (listing the classes defined by the Patent Office) [hereinafter *USPTO Classifications*]. The Patent Office has announced that it will be moving from its traditional class definitions to one established in agreement with the European Union. See *Classification Standards and Development*, U.S. PATENT & TRADEMARK OFF., <http://www.uspto.gov/patents-application-process/patent-search/classification-standards-and-development> (last modified Feb. 23, 2016, 3:57 PM). To do a translation between the two systems, see *Access Classification Information by Symbol*, U.S. PATENT & TRADEMARK OFF., <http://www.uspto.gov/web/patents/classification/index.htm> (last modified Apr. 16, 2013, 4:31 PM) (cross-referencing system to translate USPTO classes into the new CPC system and vice versa).

¹⁵⁸ See *USPTO Classifications*, *supra* note 157 (push the "go" button next to 705) (Class 705 Data Processing: Financial, Business Practice, Management, or Cost/Price Determination has over 100 sub-classifications and is associated with numerous patents). See also *USPTO Patent Counts*, *supra* note 37 (class 054 Harness for Working Animal has far fewer subclasses and accounts for few modern patent applications).

¹⁵⁹ See *USPTO Classifications*, *supra* note 157.

¹⁶⁰ *Id.* (noting that only thirteen patents were issued in class 054 in 2014).

would be an insufficient reward. The patent system has long recognized that the quantity of the reward provided needs to be dependent on the scope of the invention, giving a greater reward to the inventor of a more significant invention.¹⁶¹ Consequently, some way is needed to exempt a patent from the field-licensing system. Two basic methods are possible: an attempt can be made to globally define what constitutes a pioneering invention so that this occurs automatically or, alternatively, the inventor could be allowed to decide for him or herself that the invention is a major transformation of existing technology.

The first approach is likely to be extraordinarily difficult to achieve, as the breadth of technology that is subject to patent is effectively illimitable, including technological fields that have yet to be conceived.¹⁶² It would indeed be hard, if not impossible, to define what a pioneering invention is, since this can often only be determined in hindsight.¹⁶³ Additionally, any definitional approach is likely to introduce significant uncertainty about whether the field-license applies to a particular patent, thus removing one of the principle justifications for creating them.¹⁶⁴

If the alternate approach of self-definition is taken, the decision to exclude a patent from the field-licensing system cannot be without cost to the inventor. After all, if all inventors elect out of the system, the patent system returns to the status quo and will not gain the benefits obtained by field-licensing. Consequently, the inventor must pay a cost to elect out of field-licensing that is expensive enough that the inventor is expressing a high degree of confidence that more compensation will be obtained from individually negotiated license fees than would be earned from field-license royalties. The opt-out system would take

¹⁶¹ See *Eibel Process Co. v. Minn. & Ontario Paper Co.*, 261 U.S. 45, 63 (1923) (“In administering the patent law, the court first looks into the art, to find what the real merit of the alleged discovery or invention is, and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent, to secure to the inventor the reward he deserves. If what he has done works only a slight step forward, and that which he says is a discovery is on the border line between mere mechanical change and real invention, then his patent, if sustained, will be given a narrow scope, and infringement will be found only in approximate copies of the new device.”).

¹⁶² See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (noting that “anything under the sun that is made by man” is potentially patentable).

¹⁶³ See *supra* note 114 and accompanying text. A good example demonstrating this can be found in the early days of electronics. Although Fleming is credited with inventing the vacuum tube diode having starting his work in 1895, there is strong evidence that Thomas Edison had practiced one in 1883. Edison failed to appreciate the value of what he had conceived an abandoned the device. *Id.*

¹⁶⁴ ROBERT GOLDSCHIEDER, LICENSING BEST PRACTICES: THE LESI GUIDE TO STRATEGIC ISSUES AND CONTEMPORARY REALITIES 129 (2002).

advantage of an inventor's appreciation of the risks associated with obtaining potentially higher compensation against the surety of obtaining compensation at a lower level.

Of the two approaches, therefore, the second seems more likely to be effective. Development of a predictive algorithm that could reliably determine which inventions are pioneering is extraordinarily unlikely. Just as defining obscenity is problematic,¹⁶⁵ determining when a patent is pioneering is likely to require its effect in the marketplace to be measured. On the other hand, if it is assumed that inventors as a class are likely to be rational market actors, their collective decisions about whether to treat their patents as pioneering will be a relatively reasonable predictor of that fact.

The second approach is dependent on establishing an appropriate opt-out fee. The fee forces each inventor to engage in a cost-benefit analysis with respect to each patent. If the patent remains part of the field-licensing system, its royalty return will be limited by the modest rate that is likely to be defined for each field and by the number of patents that claim inventions within the field.¹⁶⁶ On the other hand, a field-licensed patent holder is effectively guaranteed a royalty return of some amount unless the field itself is not of interest to any operating company.¹⁶⁷ Similarly, the cost of enforcing patent rights should be significantly less than the current system as it should be in the economic interest of most developers of technology to obtain field-licenses in the fields in which their operations lie.

2. Determining Royalty Rates for Field-Licenses

The hardest aspect of implementing the proposal for field-licenses would likely be the establishment of an appropriate rate to be paid for each license. The payment must serve as sufficient compensation to the group of inventors with a patent in the field so that advancements to the specific technology represented within the field are properly

¹⁶⁵ See *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring) (“I shall not today attempt further to define the kinds of material I understand to be embraced within [obscenity] . . . [b]ut I know it when I see it . . .”).

¹⁶⁶ As will be more fully developed, the royalties paid to obtain a field-license will be split among all holders of a patent within the field. See *supra* part V.B.1.a.

¹⁶⁷ There have been no patents filed in the “typesetting” field (class 199) since before 1993. See *USPTO Patent Counts*, *supra* note 37. **Error! Main Document Only.** As the technology of typesetting is now obsolete and computer generated typesetting has replaced the old physical technologies, see Mark Collard, *The History of Typesetting*, Professional Reports, <http://www.professionalreports.co.uk/the-history-of-typesetting/> (last visited July 27, 2015), no company is likely to obtain a field license covering it.

incentivized, while costing an amount that will encourage others to obtain a field-license rather than using the technology in the hopes of not being sued.

To begin the analysis, it is necessary to carefully articulate exactly what would be acquired if a field-license were to be purchased. A field-license is, effectively, a license similar to the site licenses used by the copyright performing rights organizations.¹⁶⁸ By having one, its holder would have the right to practice any invention that has a claim within a particular field, unless the patent has been properly excluded from the field-licensing system.¹⁶⁹ The practice could be a one-time occurrence—to overcome the limitations of the experimental use defense,¹⁷⁰ for example—or could be used to distribute millions of products that practice a covered claim. In each case, the field-license royalty would be the compensation to which the patent holder is entitled.

As the rate is set, therefore, the typical economic importance of a non-pioneering patent needs to be determined. Several factors are important to this analysis; some favor a high royalty rate, while others suggest otherwise. Ultimately, administrative judges would need to balance:

Rewarding Inventors: The first and broadest factor favors establishing a high rate for a field-license. The underlying purpose of the patent system is to reward inventors for disclosing inventions.¹⁷¹ The holders of a patent have a monopoly granted by the PTO based on its determination that the statutory requisites have been met.¹⁷² Consequently, as the patentees have disclosed a technology that was not yet within the prior art, it is important to ensure that the reward provided is significant enough to serve as a motivation for future inventors to continue both inventing and disclosing new technology.¹⁷³

Encouraging More Innovation: The second factor also favors

¹⁶⁸ See *ASCAP Licensing*, *supra* note 89.

¹⁶⁹ See *supra* Part V.B.1.

¹⁷⁰ See *Madey v. Duke Univ.*, 307 F.3d 1351, 1361–62 (Fed. Cir. 2002).

¹⁷¹ See, e.g., *United States v. Univis Lens Co.*, 316 U.S. 241, 250 (1942) (“The declared purpose of the patent law is to promote the progress of science and the useful arts by granting to the inventor a limited monopoly, the exercise of which will enable him to secure the financial rewards for his invention.”).

¹⁷² See 35 U.S.C. § 101–03 (2012). This paper will not address the underlying quality problems that have been identified within the U.S. patent system and assumes that all active patents were granted appropriately and are thus entitled to be enforced. *But see* Ralph D. Clifford, *Is it Time for a Rule 11 for the Patent Bar?*, 53 THE INTELL. PROP. L. REV. 351 (2013); Clifford et al., *supra* note 6; Guerrini, *supra* note 150 and accompanying text.

¹⁷³ See, e.g., *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480 (1974); *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 229–30 (1964); *Mitchell v. Tilghman*, 86 U.S. 287, 418 (1873).

setting higher rates. It recognizes that although most new inventions do not move technology forward in a significant manner, they do represent an economically valuable improvement to the technology. A good example of this is the intermittent wiper on automobiles.¹⁷⁴ That feature is not needed to operate an automobile, not even when it is raining. At the same time, it created a better way of responding to a light rain in an automobile as is demonstrated by its universal adoption. Further, it was shown to have considerable economic value before it expired.¹⁷⁵ Royalty rates for field-licenses, therefore, need to be responsive to the likely economic value of a patent within the field.

Field of Innovation: The third factor—the specific technology included within the field—could affect the compensation in either direction. Whatever rates are established need to be sensitive to the differing economic value that an invention has based on the technology being developed. A new design for a horse-and-buggy could certainly qualify for a patent, for example; but it is unlikely to be of any significant value in modern society. On the other hand, a new telecommunication invention like Bluetooth¹⁷⁶ could be of significant economic value. Consequently, the rates would need to be set by each field rather than globally.¹⁷⁷

Low Value of Most Patents: Not all factors favor setting a high rate. In reality, the open-market economic value of many—if not most—patents is negligible.¹⁷⁸ For the non-exceptional patent, the holder never collects any royalties.¹⁷⁹ This fact serves to suggest that a low rate of field-license royalty would be appropriate and serves to contradict the other factors that favor higher rates.¹⁸⁰ As a consequence of this, rate setting within a field would need to be sensitive to the number of patents currently issued in the field and the proportion of them that fail to achieve any return.

Age of the Patent: The current patent term is twenty years from the

¹⁷⁴ U.S. Patent No. 3,351,836 (filed Dec. 1, 1964).

¹⁷⁵ See *Kearns v. Chrysler Corp.*, 32 F.3d 1541, 1544 (Fed. Cir. 1994) (noting that Ford was ordered to pay \$5,163,842 in royalties and upholding a \$18,740,465.43 judgment against Chrysler).

¹⁷⁶ See *Bluetooth Fact or Fiction*, BLUETOOTH, <https://www.bluetooth.com/what-is-bluetooth-technology/bluetooth-fact-or-fiction> (last visited Mar. 7, 2016). See also U.S. Patent No. 6,590,928 (filed Sept. 17, 1997).

¹⁷⁷ This re-emphasizes the importance of carefully defining the fields to be used in the system. See *supra* Part B.2.

¹⁷⁸ See Bronwyn H. Hall, *The Use and Value of Patent Rights*, U.S. PATENT & TRADEMARK OFF. (June 2009), www.uspto.gov/sites/default/files/aia_implementation/ipp-2011nov08-ukipo-2.pdf (“Most patents are worth very little and a few are worth a lot.”).

¹⁷⁹ See Lemley & Shapiro, *supra* note 155, at 84.

¹⁸⁰ *Id.* at 75–76, 82, 89, 93, 95.

application date.¹⁸¹ For many technologies, however, a patented invention is not equally valuable throughout its duration.¹⁸² Some technologies, such as data processing equipment, can become obsolete quickly.¹⁸³ For these types of patents, a higher rate would be appropriate early in the patent's existence, but would be of declining value thereafter. For other technologies, often legacy technologies that are no longer at the leading edge of development,¹⁸⁴ lowering the value with the passage of time would be less appropriate.

Projected Use by the Licensee: The final distinction that the system should consider is one based on how the licensee is expecting to use the patents. At one extreme, where a licensee wishes to experiment within a technological area, either to develop new products or for any reason that is just more than idle curiosity,¹⁸⁵ but does not intend to widely practice any patent within the field, a lower fee would seem appropriate. If, however, patents within the field are likely to be practiced constantly—through the distribution of products that likely practice one or more of the patents in the field, for example—a broader and consequently more expensive license for the technology would be appropriate.¹⁸⁶

¹⁸¹ See 35 U.S.C. § 154(a)(2) (2012) (enumerating a variety of circumstances in which the duration of a patent will be extended). See also 35 U.S.C. § 154(b) (2012); *id.* § 156.

¹⁸² See, e.g., Lemley & Shapiro, *supra* note 155, at 101 n. 96 (citing Pierre Régibeau & Katharine Rockett, *Innovation Cycles and Learning at the Patent Office: Does the Early Patent Get the Delay?*, 58 J. INDUSTRIAL ECON. 222, 222–46 (2010)).

¹⁸³ See GOPALASWAMY RAMESH & RAMESH BHATTIPROLU, SOFTWARE MAINTENANCE 6 (2006) (noting that there is a “shrinking life cycle[] of [software] technolog[y]”). Cf. *Why Your New Smartphone is Already Obsolete*, MY PHONE MD (July 16, 2012), <http://myphonemd.net/blog/2012/07/16/why-your-new-smartphone-is-already-obsolete/> (noting that the average life span of a cell phone is less than two years).

¹⁸⁴ See Brien Posey, *10 Obsolete Technologies That Are Still Useful*, TECH REPUBLIC (Sept. 22, 2011, 4:56 AM), <http://www.techrepublic.com/blog/10-things/10-obsolete-technologies-that-are-still-useful/>; *Old Technology We Still Use*, INTEL FREE PRESS (Nov. 19, 2013), <http://www.intelfreepress.com/news/old-technology-we-still-use/7357/>.

¹⁸⁵ See *Madey v. Duke Univ.*, 307 F.3d 1351, 1362 (Fed. Cir. 2002) (“[T]he experimental use defense is very narrow and strictly limited . . . to actions performed for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry. Further, use does not qualify for the experimental use defense when it is undertaken in the guise of scientific inquiry but has definite, cognizable, and not insubstantial commercial purposes.” (internal citations and quotation marks omitted)).

¹⁸⁶ By analogy, the scope of a copyright site license would be considerably cheaper for a small church hall than for a large, commercial concert hall. *Compare Church Licensing Fees*, CHRISTIAN COPYRIGHT SOLUTIONS, <https://www.christiancopyrightsolutions.com/purchase-license.aspx?svc=pm> (last

VI. CONCLUSION

Patent law is designed to encourage the transfer of technology from being solely within the knowledge of an inventor to being part of the common knowledge of society.¹⁸⁷ The main methods by which this is achieved is by publishing patents with their specifications and by incentivizing patentees to use or license their inventions.¹⁸⁸ For the information contained within patents to spread, the information has to be readily ascertainable by those interested in it.¹⁸⁹ The reality of the modern system, however, fails to achieve this goal because of the overwhelming number of patents being issued, many of which are of questionable quality.

The mandatory licensing scheme proposed in this paper is designed to overcome the failure of the current patent system to achieve its underlying justification. Rather than using patents in ways that prevent technology from being transferred, it will ease the flow of technology from inventors to the public.

visited Mar. 7, 2016) (listing license fees between \$199.00 and \$2,100.00 per year depending on church size), with *Music Licensing for Venues & Music Clubs*, BMI, <http://www.bmi.com/licensing/entry/538740?q=Concert+Venue+Facility> (click “Download This License”) (last visited Mar. 7, 2016) (showing a license fee starting at 0.8% of gross ticket revenue per event for for-profit venues).

¹⁸⁷ See Margaret McInerney, *Tacit Knowledge Transfer with Patent Law: Exploring Clean Technology Transfers*, 21 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 449, 460 (2011).

¹⁸⁸ *Id.* at 470.

¹⁸⁹ See Sean B. Seymore, *The Presumption of Patentability*, 97 MINN. L. REV. 990, 1018 (2013).

