A Jukebox for Patents: Can Patent Licensing of Incremental Inventions be Controlled by Compulsory Licensing?

Ralph D. Clifford

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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, 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 sure 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, will either design the new product around the patent so that infringement will be avoided[3] or will abandon the product development effort.[4]

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1. *See* Tom Harris, *How Patents Work*, HOWSTUFFWORKS, http://money.howstuffworks.com/patent.htm (2001); Jim Anderson, *Why IT Managers Need To Know About How Patents Work*, THE ACCIDENTAL IT LEADER, http://theaccidentalitleader.com/innovation-2/why-it-managers-need-to-know-about-how-patents-work (Jan. 15, 2015); World Intellectual Property Organization, *Frequently Asked Questions: Patents*, http://www.wipo.int/patents/en/faq_patents.html (last visited Apr. 21, 2015); 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).

Most times, this article will describe the problems being addressed using the language of product patents. The same issues are apropos to process patents, however, but the increasing language complexity necessary to refer to both types of patents seems disadvantageous.

2. *See* DAVID A. BURGE, PATENT & TRADEMARK TACTICS & PRACTICE 102–05 (3d ed. 1999); authorities cited *supra* note 1. *But see also* Sean B. Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621 (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. *See* authorities cited *supra* note 1.

The idealized model described above does not match the reality of the modern patent system, however, 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. This paper 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 exchange for the disclosure of new technologies. Specifically, it will address two problems that plague the current patent system:[5] the use of "haystack" patent portfolios rather than individual patents and the overwhelming abundance of newly issued patents.

II. The Current Patent System as a Market Failure for a Majority of Issued Patents

A. Patent Portfolios as "Haystacks"

Recently, a practicing patent attorney[6] used an interesting analogy for how he uses his company's patent portfolio when either negotiating or litigating against a competing firm. He constantly referred to his company's patent portfolio as an "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.[7] On first impression, one could assume that his work for his company

5. No argument is made that these problems exhaust the list of patent system problems. *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. OF LAW & TECH. 223 (2010); *id.* at 224–26 n. 4–7 with accompanying text.

6. 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.

7. *See* ERIC PARTRIDGE, A DICT. OF CLICHÉS 151 (Dutton Paperback ed. 1963).

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; instead, with the thousands and 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.[8] 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). 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. No one, after all, can afford to challenge a thousand patents,[9] but may easily be able to fund the challenge of one.

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8. *See* Justin R. Orr, *Patent Aggregation: Models, Harms, and the Limited Role of Antitrust*, 28 BERKELEY TECH. L.J. 525, 526 (2013) (student article) (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 that owns thousands of patents within the same art.

9. 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 $516,000 to

Of course, the patent law definitional model established in the United States is built on the use of needles, not haystacks. Although some modifications to the litigation system may encourage a partial return to a needle over a haystack design parameter within the patent system,[10] 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 them absorbing advancing technology as it is disclosed in newly granted patents.[11] 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.[12] A failure to meet this requirement results in liability for infringement.[13] Consequently, to protect a company against suit, its patent attorneys must appreciate the

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defend a patent suit 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.

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

11. 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.").

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

13. *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. *See id.* § 273.

entire set of existing patents and must keep abreast of newly issued ones.[14] The reality today, however, is that both of these tasks are practical impossibilities.

Currently, there are an estimated 3,000,000 active utility patents,[15] 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.[16] In 2013, over 278,000 new patents were issued.[17] In 2014, the number of new utility patents increased to over 300,000.[18] 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, the equivalent of reading and understanding a new patent every 25 seconds.[19] Even if a hypothetical patent attorney could work 24-

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14. *See* DAVID A. BURGE, PATENT & TRADEMARK TACTICS & PRACTICE 103 (3d ed. 1999).

15. *See* Dennis Crouch, *Patent Number Nine Million*, PATENTLYO (Apr. 7, 2015), http://patentlyo.com/patent/2015/04/patent-number-million.html (noting that approximately ⅓ of the 9,000,000 issued utility patents are currently active).

16. *U.S. Patent Statistics Chart Calendar Years 1963–2014*, U.S. PATENT AND TRADEMARK OFFICE, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (last modified Mar. 18, 2015, 2:59:43 PM).

17. *Id.*

18. *Id.* Some are predicting that 2014 is a peak year in the number of patents issued. *See* 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. Even if the predicted drop in issued utility patents occurs, it is expected to be by less than one percent, approximately 2,000 fewer patents from a base of over 300,000.

19. 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 Mngmt., *Pay Administration*, OPM.GOV, 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 May 20, 2015). The number of hours is based on a 40 hour work week with no vacation or sick time included. *Id.* The formula determines that there are almost 261 business days in the average year.

Dividing the 300,000 patents by 2,087 gives just under 144 per hour. Looking at the

hours a day, seven-days a week, more than 34 patents an hour would need to be comprehended.[20] Under the best of circumstances, it takes more than 25 seconds, (or even 2 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 3,000,000 patents that have already been issued. Understanding the technology disclosed in existing and newly issued patents is a Sisyphean burden.

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 than 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 destined to fail.[21] 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.[22] More significantly, extra labor can result in the overall project failing as the complex interactions involved in the project become

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inverse, this would give someone approximately 25 second to read and understand each patent. Of course, the federal figure excludes things like vacation time, so the problem would actually be more difficult than this calculation shows.

20. There are 8,760 clock-hours in a non-leap year (365 times 24).

21. *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.*"). Similarly, throwing more patent attorneys at the problem of reading and understanding patents could result in a greater amount of work. *See generally id.* 13–19.

22. *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.").

significantly less likely to be detected.[23] Although there are obviously differences between designing large-scale computer systems and reading and understanding massive numbers of patents,[24] both seem equally technologically complex as neither will succeed if complete information flow does not happen. 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 estimates given above may slightly overstate the problem is that not all companies are involved in a multitude of industries;[25] 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.[26] This equates with reading and understanding two and a half patents per business hour, every hour,

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23. *See id.* at 182–84, 211–12.

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

25. *But see* General Electric Corp., *All Products*, http://www.ge.com/products (last visited May 28, 2015) (describing 26 product categories); 3M Corp., *Products for Business and Consumers*, http://www.3m.com/3M/en_US/company-us/ (last visited May 28, 2015) (describing 32 business and 7 consumer product categories).

26. The average number of new patents issued in 2014 for the 50 most popular art units was 5,257. *See* USPTO, *Part II, Patent Counts By Class By Year*, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cbcby.htm#PartA2 (last visited May 28, 2015) [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.*

every day.[27] Further, most products are built from technologies that are protected by more than one class which could greatly increase the number of patents that must be processed and understood.[28]

C. The Result: The 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 3,000,000 active patents much less keep track of the new disclosures in the 300,000 annually issued new patents. 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.[29] The determination of willfulness is not simple; indeed, the Federal Circuit has identified nine factors that are relevant to the determination:

> (1) whether 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; and (3) the infringer's behavior as a

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27. 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.

28. 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 on 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.

29. 497 F.3d 1360, 1368 (Fed. Cir. 2007). *See* 35 U.S.C. § 284 (2012) (authorizing a court to triple damages).

> party to the litigation. ... (4) Defendant's size and financial condition. ... (5) Closeness of the case. (6) Duration of defendant's misconduct. (7) Remedial action by the defendant. (8) Defendant's motivation for harm. (9) Whether defendant attempted to conceal its misconduct.[30]

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. Ostrich-like behavior can be evidence of willfulness.[31] Consequently, although the explosion in the number of potentially relevant patents make the search task a practical impossibility, companies must nevertheless attempt it or could be found reckless and thus subject to multiple damages.[32] With the number of issued patents in existence, there is "an objectively high likelihood"[33] that at least one of them will read on to any new product 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.

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30. *Seagate Technology*, 497 F.3d at 827 (citations and footnote omitted).

31. *Cf.* Metso Minerals, Inc. v. Powerscreen Intern. Distribution, Ltd., 526 Fed. Appx. 988, 998 (Fed. Cir. 2013) (dicta) (noting that the district court's finding that the defendant "'evinced ostrich-like, head-in-the-sand behavior'" could justify a willfulness finding while overturning the district court on its finding of infringement).

32. *See Seagate Technology*, 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.")

33. *Id.*

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. The next part will explore the major solutions that have been applied in copyright law. Once this is done, some common themes will be extracted that can be used to propose techniques that can help resolve the failures of the patent system being discussed in this article.

III. Compulsory and Site Licensing under Copyright Law

The examples from copyright law will be taken from how it addresses the use and distribution of music and how it addresses performances, particularly those that occur through the electronic media. Most of these special rules were established because individualized license negotiations would be impractical[34] or market power was significantly out-of-balance so that appropriate dissemination of the work would not occur.[35] Copyright

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34. *See, e.g.*, H. REP. NO. 94-1476, at 89, *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 generally*, Christian Handke, *Joint Copyrights Management by Collecting Societies and Online Platforms: An Economic Analysis* 4–6 (2015), *available at* http://ssrn.com/abstract=2616442.

35. *See, e.g.,* H. REP. at 117, 1976 U.S.C.C.A.N. at 5732 ("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.").

law, after all, has to deal with a significantly higher number of works than are claimed under the patent law.[36] In each case, Congress has attempted to establish a specialized balance for the compensation of authors that differ from what would occur if the market was allowed to operate without special rules. 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.[37] Under the system in force today, direct negotiations between the jukebox operator and the copyright owners[38] are preferred, but if they do not occur or if they fail, Copyright Royalty Judges can set rates for the license under the provision of Chapter 8 of the Copyright Act.[39]

As originally enacted in the 1976 act, jukeboxes had a more particular set of compulsory royalty provisions than the current law provides.[40] Under the original 1976

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36. *See* U.S. Copyright Office, *Annual Report 2013* at 13, *available at* http://copyright.gov/reports/annual/2013/ar2013.pdf (last visited June 12, 2015) (Table) (showing over 500,000 new claims for a copyright registrations in in each of the last five years). Of course, a registration is never sought for a vast majority of copyrighted works as registration is not mandatory for copyright validity. *See* 17 U.S.C. § 408(a) (2012).

37. *See* 17 U.S.C. § 116 (2012). The statute uses the phrase "coin-operated phonorecord player" as a synonym for a jukebox. *Id.* § 116(d)(1).

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

39. *See id.* § 116(b). *See generally id.* §§ 801–05 (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 is in force. *Id.*

40. *See* Copyright Act of 1976, Pub. L. No. 94-553, sec. 101 at § 116, 90 Stat. 2541.

provision, an annual royalty was set for each jukebox which was paid to the Copyright Office.[41] The money that was collected under this provision would be distributed to copyright holders who could *prove* that their work had been performed on one of them.[42] Not surprisingly, "prov[ing] entitlement"[43] to royalties could be extraordinarily challenging considering that jukeboxes are distributed throughout the U.S., often in location that are not readily available for copyright owners to inspect.[44]

Despite the practical difficulties, the initially enacted compulsory license for jukeboxes was a step forward for the music copyright owners as the 1909 Copyright Act provided no compensation for the copyright owners when a work was performed on a jukebox.[45] Indeed, the market disturbance that congress was attempting to correct with the

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41. *See id*. at § 116(b).

42. *See id.* at § 116(c)(2) & (c)(4). Costs incurred by the Copyright Office and the Royalty Tribunals were to be deducted from the amounts collected. *See id.* at sec. 116(c)(1) & (c)(3).

43. *Id.* at § 116(c)(4)(A) & (c)(4)(B).

44. NIMMER, NIMMER ON COPYRIGHT ???.

45. Copyright Act of 1909 § 1(e), 61 Stat. 652 (codifying the 1909 Act as amended) *as amended by* Act of Apr. 27, 1948, ch. 236, 62 Stat. 202, Act of June 25, 1948, ch. 646 § 39, 62 Stat. 992, Act of June 3, 1949, ch. 171, 63 Stat. 153, Act of Oct. 31, 1951, ch. 655 § 16, 65 Stat. 716, Act of July 17, 1952, ch. 923, 66 Stat. 752, Act of Apr. 13, 1954, ch. 137 § 2, 68 Stat. 52, Act of Aug. 31, 1954, ch. 1161, 68 Stat. 1030, Act of Mar. 29, 1956, ch. 109, 70 Stat. 63, Act of Sept. 7, 1957, Pub. L. No. 85-313, 71 Stat. 633, Act of Sept. 7, 1962, Pub. L. No. 87-646 § 21, 76 Stat. 446, Act of Oct. 27, 1965, Pub. L. No. 89-297, 79 Stat. 1072, Act of Aug. 12, 1970, Pub. L. No. 91-375 § 6(I), 84 Stat. 777, Act of Oct. 15, 1971, Pub. L. No. 92-140, 85 Stat. 391, Act of June 6, 1972, Pub. L. No. 92-310, Title II § 205, 86 Stat. 203, Act of Dec. 31, 1974, Pub. L. No. 93573, Title I §§ 102 & 104, 88 Stat. 1873 ("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.") [hereinafter Copyright Act of 1909], *repealed by* Copyright Act of 1976, 90 Stat. 2541.

jukebox compulsory license provision in the 1976 Copyright Act was the very fact that no compensation was being provided to owners of music copyrights when the works were played on a jukebox.[46] The drafters of 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.[47] There was also a practical problem of the number of negotiations that would be necessary as the jukeboxes of the era could each store 100 distinct songs.[48]

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

The provisions of section 111 grant compulsory licenses that allow, among other similar uses,[49] a cable television company to rebroadcast over-the-air television signals to

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46. *See* H. REP. NO. 94-1476, at 89, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5728 ("The present blanket jukebox exemption should not be continued. 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 ¾ 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 (noting a decline in the number of jukeboxes by more than fifty percent from the early 1950s to the 1980s), *available at* http://www.nytimes.com/1982/07/21/garden/the-jukebox-it-seems-is-a-hit-of-the-past.html. *See generally,* KERRY SEGRAVE, JUKEBOXES: AN AMERICAN SOCIAL HISTORY 274–301 (2002).

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

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

49. This section of the Copyright Act of 1976 is among its most complex provisions. *See* Am. Broadcasting Co., Inc. v. Aereo, Inc. 134 S. Ct. 2498, 2506 (2014) ("Section 111

its subscribers.[50] The basic system establishes royalty rates to be paid by the cable company based on its gross receipts from its subscribers.[51] Subsequently, any copyright owner 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.[52] Again, as was the case with jukeboxes, if the parties claiming royalties can agree on how the money should be distributed, Congress requires that agreement to be used.[53]

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.[54] After making the determination that cable television should pay royalties, the lack of such a requirement under the 1909 Act

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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. Rep. No. 94-1476 at 88, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5702 ("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.").

50. *See* 17 U.S.C. § 111 (2012). For the current rates set, see Royalty Fee for Secondary Transmission by Satellite Carriers, 37 C.F.R. § 386.2 (2015).

51. *See* 17 U.S.C. § 111(d)(1) (2012). Royalty rates are determined based on subscribers who are not physically within the range of the normal broadcast signal. *See id.* § 111(d)(1)(B).

52. *See id.* § 111(d)(4).

53. *See id.* § 111(d)(4)(A).

54. *See* H. Rep. No. 94-1476 at 89, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5704.

suggested that transitional provisions, rather than immediately using an open market system, would be necessary.[55] 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.[56]

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 phonorecord[57] of a copyright-protected musical works as long as that work has already been performed on a phonorecord.[58] A prior phonorecord-captured performance authorized

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55. *See* 17 U.S.C. § 111 (2012).

56. H. Rep. No. 94-1476 at 88–89, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5703.

57. "Phonorecord" is defined term 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, para. 32 (2012). *See* 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 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.'").

58. *See* 17 U.S.C. § 115 (2012); H. Rep. No. 94-1476 at 107, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5722 ("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 (2015).

by the copyright owner is a prerequisite and no compulsory license is available for music that has not been rendered on a phonorecord with the copyright owner's consent.[59]

Unlike the two compulsory licenses discussed above, this license existed under the 1909 Act.[60] Congress continued the license after determining that it was needed to appropriately balance the market for recorded music.[61] The modified license found in the 1976 Act clarified some aspects of its applicability[62] and made it subject to the royalty determination provisions in the 1976 Act that allowed for non-legislative modifications of the rates.[63] This continues today under the procedures established in Chapter 8 of the act.[64] As is typical, however, Congress expressly supports private understandings about copyright compensation and gives a private agreement preference over Chapter 8 defined rates.[65]

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59. *See* 17 U.S.C. § 115(a)(1) (2012).

60. *See* Copyright Act of 1909 §§ 1(e) & 101(e).

61. *Cf.* H. Rep. No. 94-1476 at 107, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5722 (citing H. Rep. No. 83, 90th cong., 1st sess. at 66–67 that 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).

62. *See* H. Rep. No. 94-1476 at 107–08, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5722–23.

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

64. *See id.*

65. *See id.* § 115(c)(3)(B). The reality today is that compulsory license royalty rate serves as a cap as most music performances that cover prior works are negotiated. *See* NIMMER, *supra* note 44, at ???.

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.[66] Royalties for use are set by Copyright Royalty Judges under Chapter 8.[67]

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.[68]

E. Performing Rights Organizations — Collective Site Licenses

66. *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., part 381 (2015).

67. *See* 17 U.S.C. § 118(b)(4) (2012). As is typical, a private agreement will be enforced over the rates set by the Royalty Judges. *See id.* § 118(b)(4) & (c).

68. H. Rep. No. 94-1476 at 117, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5732.

Performing Rights Organizations such as ASCAP[69] or BMI[70] allow musicians to collect royalties where it would otherwise be difficult or impossible.[71] Equally, the organizations allow facilities such as concert halls to lessen the likelihood that a performance of copyrighted works at the facility will be infringing as the catalog of works held by the Organizations is quite broad.[72] Each organization negotiates a license agreement with entities that common use multiple copyrighted works, such as night clubs, concert halls, radio and television broadcasters, etc.[73] 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.[74] For example, if a musical group performs a copyrighted song in a

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69. *See generally About ASCAP*, http://www.ascap.com/about/ (last visited June 11, 2015) ("[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.").

70. *See generally Our Role*, http://www.bmi.com/about (last visited June 11, 2015) ("BMI supports businesses and organizations that play music publicly by offering blanket music licenses that permit them to play more than 8.5 million musical works.").

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

72. *See, e.g., id.*

73. *See* http://www.ascap.com/licensing/licensefinder (last visited June 11, 2015) (listing the different types of entities for which a license is available); http://www.bmi.com/licensing (last visited June 11, 2015) (listing some types of entities and allowing for the search for others).

74. *See FAQ: What does the ASCAP license do?*, http://www.ascap.com/licensing/licensingfaq.aspx#general (last visited June 11, 2015); *FAQ: What does a business really get with a BMI Music License?*, http://www.bmi.com/licensing (last visited June 11, 2015).

performance at a concert hall, the hall itself will not be considered to be 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.[75] The compensation that is paid to the Performing Rights Organization is distributed to the actual copyright owners by the organization.[76]

IV. Developing Unifying Conceptualizations of Copyright Compulsory and Performing Rights Licenses and Establishing How Modern Patent Uses Demonstrate Similar Themes

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 owner'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.

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75. *See, e.g.*, Broadcast 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." (citation omitted)).

76. *See ASCAP Payment System: Introduction*, http://www.ascap.com/members/payment/ (last visited June 12, 2015); *BMI General Royalty Information*, http://www.bmi.com/creators/royalty/general_information (last visited June 12, 2015).

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 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.[77] A similar but even 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.[78] For both record covers and nonprofit 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.[79] Finally, for performance venues, negotiating for

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77. *See Rock-Ola Bubbler Nostalgic Music Center*, BMI GAMING.COM, http://www.bmigaming.com/games-juke-box-digital.htm (last visited June 17, 2015) (describing ability of digital jukebox to hold 125,000 songs). Multiple negotiations might be needed for each song as both the rights of the music copyright and performance copyright can be affected. *See* 17 U.S.C. § 114 (2012).

78. Even props could be an issue if a copyrighted art work is shown during the show. *See generally* Stacey M. Byrnes, *Copyright Licenses, New Technology and Default Rules: Converging Media, Diverging Courts?*, 20 LOY. L.A. ENT. L. REV. 243 (2000) (discussing difficulty of determining whether a new use is authorized under an earlier license); Fara Daun, Comment, *The Content Shop: Toward an Economic Legal Structure for Clearing and Licensing Multimedia Content*, 30 LOY. L.A. L. REV. 215 (1996) (discussing the copyright issues raised by multimedia).

79. *See* H. Rep. No. 94-1476 at 117, *reprinted in* 1976 U.S.C.C.A.N. 5659, 5732 (noting financial limitations on public broadcasting); *supra* note 61, and accompanying text (discussing covers).

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.[80]

The inability to negotiate is typical in the modern patent system, too. As discussed in Part II above, patent enforcement is no longer based the "reading on" process that theoretically underlies the system as doing so is no longer practical.[81] 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.[82]

B. Enforcing Against Infringement is Problematic

A second common theme that ties the copyright licenses together is that practical enforcement of rights is often difficult to impossible. For example, the owner 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.[83] First, few copyright holders have the resources to survey all of the possible infringers

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80. *See supra* note 72, and accompanying text (discussing concert hall site licenses).

81. *See supra* note 1 and accompanying text.

82. As is discussed in more depth below, pioneering patents which develop a new technology requires a separate consideration.

83. *See, e.g., ASCAP Payment System: Keeping Track of Performances*, http://www.ascap.com/members/payment/keepingtrack.aspx (last visited June 24, 2015).

around the country.[84] Even if the copyright holder could locate every jukebox that contains a phonorecord of a copyrighted song or performance, infringement does not occur until the phonorecord is played, which could be at any hour of the day or night. Mere possession of a legitimate phonorecord is not infringing.[85] 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.[86] The use of mandatory royalties and collective societies cannot eliminate these problems of enforcement, particularly by smaller entities, but they 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 to 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

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84. *See, e.g., id.* (explaining the difficulty in determining copyright use); *ASCAP Payment System: The ASCAP Surveys*, http://www.ascap.com/members/payment/surveys.aspx (last visited June 24, 2015) (same).

85. *See* 17 U.S.C. § 106 (2012) (listing the conduct that is infringing under the Copyright Act). Playing the phonorecord infringes as it is a performance. *See id.* § 106(4). Making the phonorecord without authority infringes as it is a copy. *See id.* § 106(1). Possessing a phonorecord, wether legitimate or not, does not infringe any rights granted by section 106, *see* Jalbert v. Grautski, 554 F. Supp. 2d 57, 69 (D. Mass. 2008), although it might be subject to seizure and destruction if the phonorecord was unauthorized. *See* 17 U.S.C. § 503(a)(1)(A) (2012).

86. 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, para. 37 (2012). 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).

processing of a company. For software, although it is theoretically possible to reverse engineer a software products 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,[87] but even if it should prove possible, many products are distributed using purported licensing agreements that prohibit reverse-engineering from being attempted,[88] 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 (one can see how french fries are prepared at most fast food restaurants, for example), 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 described best as a failure of the

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

88. *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 contractual attempts 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 TEMPLE L. REV. 1241, 1269 n.178 (2000).

intellectual property law to achieve its primary goal: the wide dissemination of the copyrighted work. For example, the owner of a copyrighted musical composition may wish to prevent anyone save him or her self to sing a copyrighted song in a public performance. Theoretically, insisting on this methodology could maximize the financial return to the owner, particularly if the composition is popular. If the public wants to hear a performance of the song, the copyright owner gains compensation for both the music and the performance rather than just the music alone. 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, that are likely to leave "whistling the tune and everything"[89] with the corresponding demand for more performances than the copyright owner can satisfy. The cover license provision in the Copyright Act works against this consequence by giving, in effect, the copyright owner only the first opportunity of releasing the song on a phonorecord but, having done so, all others may also, paying the copyright owner what is determined to be a fair royalty for the privilege of using the underlying music.

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

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

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

technology. John Fleming, the first to obtained a patent in what became the electronics space, was granted a patent on the vacuum-tube diode.[90] Several years later, Lee de Forest was issued a patent on the vacuum-tube triode.[91] Although the triode has functions that are quite different than the diode—fundamentally, a diodes transforms electricity from alternating to direct form while a triode can amplify signals[92]—a triode can also be used as a diode and, more critically, a triode reads on to the Fleming diode patent.[93] 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.[94]

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

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

92. *See Early Tube History*, ALL ABOUT CIRCUITS, http://www.allaboutcircuits.com/textbook/semiconductors/chpt-13/early-tube-history/ (last visited July 21, 2015) (describing the diode); *The Triode*, ALL ABOUT CIRCUITS, http://www.allaboutcircuits.com/textbook/semiconductors/chpt-13/the-triode/ (last visited July 21, 2015) (describing the triode). Both devices also have additional uses in the area of capturing and producing radio waives. *See* Radio Corp. of Am. v. Radio Eng'g Lab., 293 U.S. 1, 10–11 (1934).

93. *See* Marconi Wireless Tel. Co. of Am. v. De Forest Radio Tele. & Tel. Co., 243 F. 560, 565 (2d Cir. 1917). *See generally* 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).

94. *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.").

Today, the use of a patent to prevent anyone from using a technology has been associated strongly with a "patent troll," often now called a "non-practicing entity" or "NPE."[95] 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 agreements[96] 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.

D. Protecting a Newly Emerging Market

The final common theme that underlies the 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.[97] Other times, the market developed because of a novel technology.[98] In both cases, Congress determined that an open, one-on-one negotiation between the copyright owners and the new users would be ruinous to the development of the newly emerging distribution method.[99]

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

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

97. *See supra* Part III.A.

98. *See supra* Part III.B

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

The primary example of a market being protected because earlier law did not address the use is the jukebox provision in the 1976 Copyright Act.[100] The 1909 Act left the use of music by a jukebox completely free from copyright limitations.[101] 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.[102]

A good example of the second type of market-protection need is shown by the cable television provisions.[103] This industry was developing at the time the 1976 Act was being crafted.[104] Congress was fearful that the parties controlling copyrighted works on the existing broadcast media would be likely to prevent the use of their copyrights by the cable industry as a way of preventing the cable industry itself from growing.[105]

Here, 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 owner of a patent to use it to prevent a competitor from entering a marketplace. The basic legal right given by each system explains this difference. A copyright holder has the affirmative right to use the copyrighted work;[106] a patent holder

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100. *See supra* Part III.A.

101. *See id.*

102. *See id.*

103. *See supra* Part III.B.

104. *See id.*

105. *See id.*

106. *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)).

does not and can only prevent others from using the invention.[107] More fundamentally, however, is the purpose of the patent system—the development of new technology, broadly defined. As the patent law 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.

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 areas[108] or where required as a remedy[109]—can choose when and if to authorize others to use their patented technology.[110] As discussed above, however, the current way businesses are using patents introduce significant problems and result in the redefinition of the underlying principle of the patent system of rewarding disclosure with the ability to monopolize the technology. Numerous articles have been

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107. *See* 35 U.S.C. § 154(a)(1) (2012) ("Every patent shall ... grant to the patentee ... *the right to exclude* others from making, using, offering for sale, or selling the invention ...." (emphasis added)).

108. *See, e.g.*, Clean Air Act, 42 U.S.C. § 7608 (2012); Atomic Energy Act, *id.* § 2183.

109. *See* U.S. v. Glaxo Group, 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.").

110. *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." (citations and quotation marks omitted)); Intergraph Corp. v. Intel Corp., 195 F.3d 1346, 1362–63 (Fed. Cir. 1999).

written which attempt to address some of these problems.[111] 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.[112] Consequently, in order to restore its operating principles, alternative mechanisms need to be explored to redirect the system to serves society's requisites. This 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 litigation club presents the same kind of system failure as 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

111. *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); Osenga, *supra* note 95; 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); Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583 (2009); Lemley, *supra* note 96.

112. *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)).

that a mistake as to coverage will result in liability.[113] Consequently, automatic negotiations in the form of a statutory license is used.

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. Without a viable mechanism to determine if each of a thousand patents read on to a company's product, the company is left with no harbor to avoid potential infringement. The reality is, like the copyrighted music in a jukebox or television shows being rebroadcast by a cable system, individual patent-by-patent analysis for the ones in a haystack portfolio is impossible.

2. Disabling Numerosity

While the haystack club is an 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. With 300,000 newly issued patents each year on top of the base of 3,000,000 active patents, it has become impossible to absorb the newly disclosed technology, particularly within the most innovative fields.[114] The most similar copyright problem is the public performance of music as there are millions of public performances

113. *See supra* Parts III.A & III.B.

114. *See supra* Part II.B.

of copyrighted music on an annual basis.[115] The primary copyright response to this are the recognition of the performing rights societies.[116] These groups allow one negotiation to occur which results in the authorized use of large catalogs of protected works.[117] The user of copyrighted music can be assured that the use of any of the multitude of works within the catalog will be authorized, even new works developed after the original negotiation with the performing rights society was concluded.[118]

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. Specifically, the market value associated with the license of a patent that claims a minor advancement[119] in a technological area should be correspondingly small.

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115. "Performance" is a term of art under the Copyright Act that 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, para. 30 (2012). Similarly, "publicly" is defined broadly to include personal or transmitted performances to groups other than one's family and friends. *Id.*, para. 37. 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. Companies, 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 Ind., Inc. v. Redd Horne, Inc., 749 F.2d 154, 158–59 (3d Cir. 1984).

116. *See supra* Part III.E. There is also a strong resemblance with jukeboxes. *See supra* Part III.A.

117. *See supra* Part III.E.

118. *See id.*

119. As is well recognized in the literature, many of these patents are, in fact, invalid as they are anticipated or obvious. *See, e.g.*, Christi J. Guerrini, *Defining Patent Quality*, 82

In reality, however, the value that can be claimed is greatly enlarged because of the costs associated with litigating patent rights.[120]

B. How Mandatory Patent Licenses Would Work

In this part of the article, the operations of the mandatory licensing system will be described. First, the concept of a field-license will be introduced along with an approach for defining fields and establishing how to handle exceptional patents that should not be limited to the mandatory licensing approach. Then, the method for determining how the mandatory rates should be established will be stated.

1. Establishing Field-Licenses

To implement the proposed system, there would need to be two classifications for patents. Most patents—specifically the ones that add only a minimal amount to the known technology—would be subject to the mandatory licensing system. This type of patent will be referred to as a "field-licensed patent." The others that do 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."

For the field-licensed patents, a neutral magistrate[121] would define a royalty rate for all patents within a particular field of technology. Once the rate for the field is established,

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FORDHAM L. REV. 3091, 3092–94 (2014); Wagner, *supra* note 112, at 2138–39. The cost of licensing a non-patentable technology should be zero.

120. *See* AILPA, *supra* note 9. For an invalid patent, any license fee is presumably associated with the costs of litigating the invalidity.

121. 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).

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[]"[122] 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 the mandatory system functioning[123]—thus satisfying the system's fundamental purpose of rewarding inventors for disclosing their inventions 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. If the product practices an art within the field, the mandatory license would 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"

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122. 35 U.S.C. § 271(a) (2012)

123. In fact, the 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. PERSP. 75, 75 (2005) (noting that "[m]ost issued patents turn out to have little or no commercial significance"), *available at*, https://www.aeaweb.org/articles.php?doi=10.1257/0895330054048650.

definitions that designate a patent's technological field.[124] For some of these classes, however, the code covers an immense amount of technology that differs more than the single class implies.[125] Consequently, if considering the most commonly patented technologies, the sub-classes defined by the patent office may be more appropriate.[126] In contrast to this, of course, are the least popular PTO classes where subdividing beyond the primary class definition would seem to be a colossal over definition.[127] 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 the relative

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124. *See US Classes by Number with Title Menu*, U.S. PATENT AND TRADEMARK OFFICE, http://www.uspto.gov/web/patents/classification/selectnumwithtitle.htm (last modified July 10, 2012 07:08) (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 AND TRADEMARK OFFICE, http://www.uspto.gov/patents-application-process/patent-search/classification-standards-and-development (last modified Jul. 1, 2015 4:50 PM). To do a translation between the two systems, *see Classification Search*, U.S. PATENT AND TRADEMARK OFFICE, http://www.uspto.gov/web/patents/classification/index.htm (last modified: Apr. 16, 2013 4:31:16 PM) (cross-referencing system to translate USPTO classes into the new CPC system and vice versa).

125. Class 705 (Data Processing: Financial, Business Practice, Management, or Cost/Price Determination) has over 100 subclassifications, *see* USPTO Classifications, *supra* note 124 (push the "go" button next to 705), and is associated with numerous patents, *see* USPTO Patent Counts, *supra* note 26, while class 054 (Harness for Working Animal) has far fewer subclasses, *see* USPTO Classifications, *supra* note 124 (push the "go button next to 054) and accounts for few modern patent applications, *See* USPTO Patent Counts, *supra* note 26.

126. *See* USPTO Classifications, *supra* note 124.

127. *See* USPTO Patent Counts, *supra* note 26 (noting that only 13 patents were issued in class 054 in 2014).

popularity of them and would allow the PTO to keep the system appropriate as technology changes.

Although field-licensing would work better than the current system for most patents, an exception is needed for some patents. When an inventor creates something that is going to create a broad field of technology—a pioneering invention—field-license compensation would be an insufficient reward. The patent system has long recognized that the quantity of the reward provided needs to be dependant on the scope of the invention, giving a greater reward to the inventor of a more significant invention.[128] 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 her self 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.[129] It would indeed be hard, if not impossible, to define what

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128. *See* Eibel Process Co. v. Minnesota & 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.")

129. *See* Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) (determining that "anything under the sun that is made by man" is potentially patentable (quotation marks and citations

a pioneering invention is as this can often only be determined in hindsight.[130] 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.

If the alternate approach of self-definition is taken, the election out of the field-licensing system cannot be without cost. After all, if all inventors elect out of the system, we return to the status quo. Consequently, the inventor must pay a cost to elect out of field-licensing that is high 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 be taking 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, the second seem more likely to be effective. Developing a predictive algorithm that determines reliably which inventions will be pioneering is extraordinarily unlikely. As with establishing something as being obscene, determining when a patent is pioneering is likely to require its effect in the marketplace to be

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omitted)).

130. 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. *See Early Tube History, supra* note 92. Edison failed to appreciate the value of what he had conceived an abandoned the device. *Id.*

measured.[131] 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 calculation about 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.[132] 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.[133] Similarly, the cost of enforcing patent rights should be significantly less with 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.

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131. *See* Jacobellis v. State of Ohio, 378 U.S. 184, 197 (1964) (Stewart, 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 ....").

132. As will be more fully developed in part V.B.2, *infra*, the royalties paid to obtain a field-license will be split among all holders of a patent within the field.

133. There have been no patents filed in the "typecasting" field (class 199) since before 1993. *See* USPTO Patent Counts, *supra* note 26. As the technology of typecasting 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.

2. Determining Royalty Rates for Field-Licenses

The hardest part of implementing the proposal for field-licenses is likely to be establishing an appropriate rate to be paid for each license. To start the analysis, it is necessary to articulate what is being acquired if a field-license is being purchased. A field-license is, effectively, a type of site license similar to the licenses used by the copyright performing rights organizations. It would give its holder the right to practice any invention that has a claim within the particular field unless the patent has been properly excluded from the field-licensing system. The practice could be a one-time occurrence (to overcome the limitations of the experimental use defense,[134] 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 owner 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 favoring a high royalty rate while others suggest not:

Rewarding Inventors: The first and broadest factor favors establishing a high rate for a field-license. The underlying purpose of the patent system itself is to reward inventors for disclosing inventions.[135] The holders of a patent have a granted a monopoly by the Patent and Trademark Office based on its determination that the statutory requisites have

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134. *See* Madey v. Duke University, 307 F.3d 1351, 1360–62 (Fed. Cir. 2002).

135. *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.")

been met.[136] Consequently, as the patent owners 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.

Encouraging More Innovation: The second factor also favors setting higher rates. It recognizes that, although most new inventions do not move technology forward in a significant manner, they do represent a economically valuable improvements to the technology. A good example of this is the intermittent wiper on automobiles.[137] 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.[138] 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 could raise or lower the compensation in a field. 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-

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136. *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* Guerrini, *supra* note 119; Clifford, *supra* note 5; Ralph D. Clifford, *Is it Time for a Rule 11 for the Patent Bar?*, 53 IDEA 351 (2013).

137. *See* U.S. Pat. No. 3,351,836 (filed Dec. 1, 1964).

138. *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).

buggy could certainly qualify for a patent, for example, but it is unlikely to be of significant value in today's society. On the other hand, a new telecommunication device like Bluetooth[139] could be of extraordinary economic value. Consequently, the rates would need to be set by each field rather than globally.

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 zero. For the non-exceptional patent, the owner never collects any royalties.[140] 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. 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.

VI. Conclusion

139. *See Fast Facts*, BLUETOOTH, http://www.bluetooth.com/Pages/Fast-Facts.aspx (last visited July 28, 2015); U.S. Pat. No. 6,590,928 (filed Sept. 17, 1997).

140. *See* Lemley, *supra* note 123, at 75.