

Patents, Property & Competition

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Abstract

Patent law's broad grant of exclusivity is one of its defining features. In contrast to other areas of intellectual property, patent law prohibits acts of independent invention. Even if a second inventor had no connection or aid from the initial inventor, patent law's exclusionary reach prevents the second inventor from using her own invention. This broad reach is thought to be normatively necessary for providing the needed limited time monopoly that incentivizes invention. But can patent law justify this broad grant of exclusivity? The article finds that, in an ideal world, such broad exclusivity is not necessary as an economic matter nor is it some necessary normative artifact when patents are viewed as property. Instead a narrower grant of exclusivity that allows for independent invention and is premised on competition and free entry can provide for the same set of inventions (if not more inventions) than does the current monopoly centric system. Furthermore, the article shows that such a narrower grant is more in line with traditional property theory's normative goals. Before concluding that patent law's broad exclusion cannot be justified, the article explores whether the broad exclusionary grant results from real world, practical concerns. There the article finds that, though not normatively desired, such broad grants might be necessary in order to provide efficient administration of the patent system. In other words, patent law's broad exclusivity is not a normative design feature but rather, at best, it is an unwanted bug that we would jettison if we could.

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Patents, Property & Competition

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I. Introduction

In 1785, Massachusetts granted a charter to a group of private businessmen to undertake a new, very risky technological feat that, if successful, would certainly be of “great public utility.”¹ As described in their charter, the business men were to attempt to construct and then maintain a bridge across the Charles River connecting Charlestown to Boston. In return they were given the right to collect tolls from the bridge traffic for a limited time. The bridge was built and it clearly benefited both the public and the business men who came to be known as the Proprietors of the Charles River Bridge.² This apparent win-win situation soured in following years as the public continued to pay its tolls while the proprietors continued to profit during their term of exclusivity over the bridge.

But public sentiment did not turn to calls of shortening or nullifying the charter. Instead, in 1827 another group of business men, soon to be known as the Proprietors of the Warren Bridge, petitioned the Commonwealth to allow them to build their own bridge next to the existing bridge.³ That second charter was granted and the Warren Bridge was built.

¹ See generally STANLEY I. KUTLER, PRIVILEGE AND CREATIVE DESTRUCTION: THE CHARLES RIVER BRIDGE CASE (1971).

² Shares in the original Charles River Bridge cost \$300 in 1785 were being bought and sold for over \$7000 by 1827.

³ But, in contrast to the relatively long period of exclusivity granted before, the Proprietors of the Warren Bridge only asked for a period of exclusivity long enough for them to recoup their costs plus interest and in no case would their exclusivity last more than six years. Their terms with the public were more generous. They agreed to only

The incumbents sued the upstarts in the appropriately named case of the *Proprietors of the Charles River Bridge v. Proprietors of the Warren Bridge*.⁴ The upstart entrants certainly did not deny that investors need some type of exclusivity in order to recoup their initial, risky investments. Rather the controversy centered over the *type* of exclusivity that such risky investments required. Ultimately the Court sided with the upstarts but in a strong dissent Justice Story argued, for what had been until that time the standard view, that such risky projects needed broad protection. He felt such projects needed to be protected not just from misappropriation but also needed to be protected from competition. In breaking with the past, the majority favored a narrower grant of exclusivity that allowed competition. They viewed the entry of the proprietors of the Warren Bridge as fair and productive and not ruinous. The case signaled an important change in attitude toward such exclusive grants.⁵

Reading the opinion, I, like others, cannot but help think of patent law.⁶ The focus of the *Charles River Bridge* case is, as is the focus of patent law, on the recovery invested fixed costs. The central question in patent law is what *type* of exclusivity does an inventor need? Interestingly the *type* of exclusion currently granted by a modern patent, and the rhetoric used to justify it, look very much like the exclusionary grant that Justice Story felt was necessary to induce investment in such risky projects.

In particular, a modern patent excludes not only those that use the inventor's creation but also those that independently invent the same subject matter. If the Proprietor's of the Charles River Bridge had been granted a charter modeled on modern patent law, the builder's of the Warren Bridge, even though they were building an entirely new bridge, certainly would have been prohibited.⁷ In contrast, a copyright grants a different type of exclusivity. A copyright excludes others only from using copies of the author's work. Thus, if an author wants to undertake their own time and resources to independently recreate some subject matter, then an existing copyright holder cannot stop it. In this respect, copyright styled exclusion is akin to the grant supported by the pro competition majority from the *Charles River Bridge* case.

In short, patent law still uses a type of exclusivity that was thought to be necessary nearly two centuries ago. Since then economic thinking has moved toward a narrower stance on exclusivity and has generally employed productive competition and entry rather than monopoly. I cannot but wonder if this critically important facet of modern patent law is an artifact of economic thinking that already went into decline in 1837. This article explores whether patent law can justify its broad exclusive grant. Others have asked the same question.

On October 11, 1955 the Senate's Subcommittee on Patents, Trademarks, and Copyrights convened to discuss patent reform. They heard from many of the leading experts on the subject.

recoup their costs plus interests at which point they would hand the bridge over to the commonwealth and they agreed that in no event would they hold the bridge for more than six years. The shareholders of the Charles River Bridge, many who had recently become members, certainly did not wish to see the new Warren Bridge built and they saw that, at the very least, the profitability of their shares would plummet in six years if not earlier.

⁴ *Proprietors of the Charles River Bridge v. Proprietors of the Warren Bridge*, 11 Peters 420 (1837).

⁵ Herbert Hovenkamp, *Enterprise and American Law, 1836-1937*, 110-14 (1991).

⁶ See e.g. John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 479 note 126 (2004); Robert P. Merges, *Who Owns the Charles River Bridge? Intellectual Property and Competition in the Software Industry*, unpublished manuscript. See also Gregory Alexander, *Property as Propriety*. In some critical ways, the Charles River Bridge Case is not a perfect allegory for patent law. Bridges are considered natural monopolies and as such we may ideally want only one bridge to be built. Inventions have some common characteristics to natural monopolies but ultimately there are important differences.

⁷ Certainly one could argue about claim scope and the distance that competitors are forced to stay away but the central point is that the builders of the Warren Bridge could not just build their bridge right next to the first one.

For the afternoon session, the committee made special room to hear from Judge Learned Hand who at the time was 83 years old⁸ and had served as a federal judge for over 46 years.⁹ He was, and continues to be, one of the most venerated judges that ever presided over a patent case.¹⁰ Before proceeding Judge Hand made sure he understood the purpose of his testimony. He reaffirmed that the committee wanted to “consider [patent law] anew from the bottom up.”¹¹ With that charge Learned Hand proceeded to give his advice on patent reform. He “suggest[ed] to an incredulous patent bar”¹² that he would “make patents like copyrights. [He felt] that a man is entitled to what he contributed ... and unless [others] used what he did, he could not stop it.”¹³ He suggested, contrary to the current patent rule, that patent infringement be limited “to those who could be shown to have copied what the inventor did.”¹⁴ As a judge he thought such a system would be not only constitutionally permissible and judicially workable but could also “avoid a great deal of the animosity that has surrounded patents nearly always.”¹⁵ In the intervening fifty years, few have even noted his remarks, much less taken them seriously.¹⁶ But we should.

Patent law’s broad grant of exclusivity is one of its defining features. This article explores whether patent law’s broad grant of exclusivity can be justified. This article divides the discussion into two parts. It begins with a normative, theoretical exploration followed by a practical and administrative discussion. For its theoretical discussion, the article assumes that a patent system can be administered perfectly at zero cost. In the idealized world, this article explores two rationales that are used to justify patent law’s broad exclusion. It first explores whether the economic analysis of incentives can justify patent law’s broad exclusivity and it then explores whether property law and its focus on exclusion can justify patent law’s broad rule. The article ultimately finds that patent law’s exclusivity is not justified as a theoretical necessity. As an economic matter and as a matter of fundamental property law, a copyright styled rule for patents can provide adequate private incentives to engage in invention, can provide a socially efficient use of resources, and can provide the type of security that property law demands.

⁸ See GERALD GUNTHER, LEARNED HAND 1 (1994).

⁹ *Id.* at 133. The Committee took pains to make sure that Judge Hand could speak at length excusing him at 3:41 so that he could still catch his four o’clock train back to New York. See *The American Patent System: Hearing before the Subcomm. on Patents, Trademarks, and Copyrights of the S. Comm. on the Judiciary*, 84th Cong., 132 and 135 (1956)(statement of Judge Learned Hand)[hereinafter Hand on Patent Reform].

¹⁰ GUNTHER, *supra* note 1 at 306-15. His fame certainly extended well beyond patent law. At the time *The New York Times* called him “the most revered of living American judges.” *Id.* at 653.

¹¹ Hand on Patent Reform at 111.

¹² BENJAMIN KAPLAN, AN UNHURRIED VIEW OF COPYRIGHT 45 (1967).

¹³ Hand on Patent Reform at 117.

¹⁴ *Id.* at 114.

¹⁵ *Id.* at 114-15. Ultimately, Judge Hand concluded his radical testimony on a cautious note. When pressed to tell “what Congress ... should do [to reform patent law]” he hesitated to tell the assembled Senators to adopt a copyright like model for patent law instead he warned that “[u]ntil we have a thoroughgoing investigation [of the patent system], it is all going to be guesswork” Learned Hand of Patent Reform at 118 and 120 (Senator O’Mahoney).

¹⁶ The one exception is Benjamin Kaplan. See KAPLAN, *supra* note 5 at 45. Others though have begun exploring, discussing, and promoting a defense for independent inventors in patent law. See Samson Vermont, *Independent Invention as a Defense to Patent Infringement*, 105 MICH. L. REV. 475 (2006); Carl Shapiro, *Prior User Rights*, 96 AM. ECON. REV. 92 (2006); Stephen M. Maurer & Suzanne Scotchmer, *The Independent Invention Defense in Intellectual Property*, 69 ECONOMICA 535 (2002); John S. Liebovitz, *Note, Inventing a Nonexclusive Patent System*, 111 YALE L.J. 2251 (2002) [hereinafter Liebovitz, *Nonexclusive Patents*]. Other work has applied independent invention to the issue of claim scope in gene patents. See Oskar Liivak, *Maintaining Competition in Copying: Narrowing the Scope of Gene Patents*, 107 U.C. DAVIS L. REV. 177 (2005).

The article then turns from this idealized, theoretical world to the practical world. The article considers the comparative administrative costs of running such a system against the costs of running the system with the current patent rule. The article finds that there are some critically under-appreciated administrative benefits to the copyright styled rule but the article ultimately cannot, without empirical support, argue that one rule is categorically superior to the other.

II. Competition, Incentives and the Patent System

The philosophical basis for U.S. patent law is utilitarian. As a result, much of the discussion of patent law relies heavily on economic analysis. Economic analysis has been employed in justifying the particularly broad exclusive rights for patents. Generally, two rationales are highlighted. First, the broad exclusion is argued to be needed as a private incentive. Without such broad exclusion, a private individual cannot be adequately assured of recouping their upfront costs and as a result these socially valuable investments in invention are never made. The first part of this section will address that line of reasoning and will show that under some reasonable circumstances competition from entrants will not adversely impact incentives. In particular in a world where entrants have not copied from the incumbent and where entrants have their own comparable fixed to recoup, then entry will not drive anyone's profits below average cost. Thus, despite reducing profits for incumbents, entry by independent inventors will not change their actions. All inventive projects undertaken under a monopoly styled patent system will be also undertaken in a patent system that allows independent invention. In other words, a copyright styled rule for patents does not create fewer inventions than the current monopoly styled patent system.

Second, even if a free entry patent system does not impact private decision making, more sophisticated critiques question whether a free entry system, where each entrant incurs their own arguably redundant fixed costs, can be socially beneficial. The key criticism is that a free entry system that permits independent inventors will spend too many societal resources on wasteful, redundant research and development. In contrast, it is argued that in a monopoly styled system only one firm, the firm that procures the patent, will spend on researching and developing that invention. The second part of this section will address those criticisms and will show that once patent racing is considered then, under reasonable conditions, a free entry system will be socially superior to a monopoly system. In particular, even if we assume that the added research and development costs in a free entry system are redundant, a monopoly system will in fact waste more resources in the struggle to obtain the patent. The section will also highlight other benefits of the free entry system like improved dynamic effects. By producing many varied solutions to some demand rather than just one solution, a free entry system reduces hold out problems and it increases the diversity of solutions from which improvers can initiate their improvements.

A. Does Competition Dampen Private Incentives?

As stated by the Federal Trade Commission “competition through free enterprise and open markets is the organizing principle for most of the U.S. economy.”¹⁷ But patent law does not follow this rule. In fact, it seemingly stands diametrically opposed to competition. Although there are differing theories explaining patent law, they are all predicated on the assumption that

¹⁷ See Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy* 1 (October 2003).

competitive markets will not produce optimal amounts of inventive activity and all too often it is assumed that the patent system therefore must correct for this underproduction by preventing competition. As has been argued, “free competition is the norm. Intellectual property [including patent] rights are an exception to that norm....”¹⁸ Patent law is “an artificial deviation from competition....”¹⁹ It is a “limited island[] of monopoly” surrounded by a “free-enterprise economy dedicated to competition.”²⁰ This exceptionalism, this “basic economic inconsistency”²¹ of the patent system has been justified as necessary to provide the proper incentives to inventors. “[P]atents are deliberate government interventions in the market – a sort of mercantilist economic policy for stimulating innovation.”²² For the most part, most agree that this deliberate intervention is on the whole beneficial.²³

To begin with, patent law and competition have been seen to be at odds because of a narrow view of competition. Many have unfortunately fixated on competition as perfect competition and its requirement that price equals marginal cost.²⁴ If competition is viewed this way, then indeed competition and the patent system are incompatible. If prices for inventions are forced to marginal cost too early then inventors cannot recoup their fixed costs and as a result they will not invest in inventing. But perfect competition isn’t really about the process of competing between firms. Rather perfect competition is the market equilibrium that results after the competitive process between firms has run its course. Instead, this article focuses on broader notions of competitive acts rather than the resulting long-term equilibrium. Fully articulating what is ‘competitive business conduct’ is not trivial.²⁵ But nonetheless broader notions of competition have focused on the importance of free and open entry into markets wherever abnormal returns are available²⁶ and it is this notion of competition that is used here.

But even when competition is viewed as productive business rivalry, patent law and incentives to invest in risky projects have been seen to be at odds with competition. This view of the patent law’s broad exclusion as a necessary and deliberate intervention into the market is a venerated one. As described in the introduction, it was a sentiment shared by Justice Story. He felt that government charters for inducing investment had to be broadly construed and that a

¹⁸ Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1031 (2005)[hereinafter Lemley, *Free Riding*].

¹⁹ Mark A. Lemley & Brett Frischmann, *Spillovers*, 107 COLUM. L. REV. 257, 267 (2007).

²⁰ SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF S. COMM. ON THE JUDICIARY, 85 CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM, iii (Comm. Print 1958)(Sen. Joseph C. O’Mahoney).

²¹ *Id.* (“This inconsistency [between patents and free competition] has been rationalized in various ways. It is pointed out that the patent monopoly is limited both in scope and time; that this monopoly is more than balanced by the inventive contribution; that patented inventions are not actually monopolistic in fact because they are subject to competing alternatives and substitutes; that such monopoly as does result is unobjectionable because the public is deprived of nothing it had previously possessed; and so on. Such explanations may render the conflict less serious, but they do not resolve it.”).

²² DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW COURTS CAN SOLVE IT* 8 (2009).

²³ *Id.* (“We think that this economic policy is on balance a good one.”)

²⁴ See John F. Duffy, *The Marginal Cost Controversy in Intellectual Property*, 71 U. CHI. L. REV. 37 (2004) (criticizing calls for marginal costs pricing in patent law by extending the work of Ronald Coase and his article *The Marginal Cost Controversy* that showed the errors of more general calls in economics that fixated upon marginal cost pricing.)

²⁵ Paul McNulty, *Economic Theory and the Meaning of Competition*, 82 Q. J. ECON. 639, 640(1968)(“There is a striking contrast in economic literature between the analytical rigor and precision of competition when it is described as a market structure, and the ambiguity surrounding the idea of competition whenever it is discussed in behavioral terms.”)

²⁶ See WILLIAM BAUMOL *ET. AL.*, *CONTESTABLE MARKETS AND THE THEORY OF INDUSTRY STRUCTURE* (1982).

copyright styled rule that allowed independent entry would ruin investment into risky activities. He could “conceive of no surer plan to arrest all public improvements, founded on private capital and enterprise” than to make the grant narrow enough to allow entry by others.²⁷ He was incredulous that a government grant could ever allow for such entry as it would “destroy [the original] grant.”²⁸

These worries over weakening a patent’s exclusivity are still prevalent today. Some still worry that narrowing the patent rule in the direction of a copyright styled rule risks “reduc[ing] incentives to invest in important technologies.”²⁹ Generally, there is a sense that lower incentives must lead to lowered amounts of invention. But this does not seem entirely correct yet it is relatively easy to see how that notion has evolved.

Consider the set of inventions that are created and commercialized under the current patent system. These are inventions that, with patent protection, have a demand great enough such that the inventor can recoup their fixed cost during the patent term. In other words, inventions that are actually created and commercialized are all those where inventors forecast non-zero economic profits.³⁰ This article claims that, generally, if a particular invention can generate positive economic profits under the current patent system then it will still generate non-zero economic profits under a competitive patent system.³¹ As a result all the inventions created under the current system will be still created under a competitive system. It may well be that profits are smaller for a competitive system than with the current system but as long as there are profits and not losses then a rational inventor that moves forward under the current system would do so under a competitive system. Importantly as long as all entrants have similar fixed costs to recoup then even “[i]f firms enter the industry whenever positive profits are available, each firm makes zero economic profits in the long run....”³² As long as a company stands to make a non-

²⁷ Proprietors of the Charles River Bridge 11 Peters 420 (1837)(dissent J. Story). Justice Story went on to quote Kent from *Ogden v. Gibbons* (“Any narrower construction, in favor of the grantor, would render the deed a fraud upon the grantee. It would be like granting an exclusive right of ferriage between two given points, and the setting up a rival ferry, within a few rods of those very points, and within the same course of the line of travel. The common law contained principles applicable to this very case, dictated by a sounder judgment, and a more enlightened morality. If one had a ferry by prescription, and another erected a ferry so near to it as to draw away its custom, it was a nuisance, for which the injured party had his remedy by action, &c. The same rule applies, in its spirit and substance, to all exclusive grants and monopolies. The grant must be so construed so as to give it due effect by excluding all contiguous and injurious competition.”).

²⁸ Justice Story and Proprietors of the Charles River Bridge 11 Peters 420 (1837).

²⁹ Mark Lemley & Chris Cotropia, *Copying in Patent Law* at 19 (“There is a risk that the availability of the defense will reduce the incentive to invest in important technologies.”) See also Samson Vermont, *The Angel is in the Big Picture: A Response to Lemley*, 105 MICH. L. REV. 1537, 1539 (2007) (“Some inventions ... [like] pharmaceuticals ... may require the extra incentive provided by our current winner-take-all patent system.”)

³⁰ Here positive economic profits means revenue that equals or exceeds all project costs such as fixed, marginal, and opportunity costs.

³¹ Recent scholarship has focused on the many economic advantages of introducing this type competition into patent law. See generally *supra* note 7. Indeed by reducing the scope of the patent right, the patent system can encourage entry that often brings with it many of the economic benefits of competition. The trouble with these theories is that they seem incompatible with a property view. For example, John Liebovitz, offers one of the best accounts of the benefits of competition in patent law. He argues that entry reduces deadweight loss, reduce dynamic costs, and reduce rent seeking costs. Liebovitz, *Nonexclusive Patents* at 2255. See also Liivak, *supra* note 7 (outlining similar economic benefits from narrower patent claims to naturally occurring gene sequences). The trouble arises in his implementation. He advocates “a nonexclusive patent system.” Liebovitz, *Nonexclusive Patents* at 2255. He suggests implementing his system by “allow[ing] defendants in patent litigation to invoke an ‘independent invention’ defense” or by making independent inventors “joint owners.” *Id.* at 2280.

³² CARLTON & PERLOFF, *supra* note 146 at 281.

negative economic profits, then they will proceed with that project. And since a competitive patent system just changes the size of the profit but not its sign, no project are lost. All the projects that are generated under the current system should also be generated under a competitive system.

This above analysis can be highlighted and expanded by referring to Figures 1-4 and the following analysis.³³ In Figure 1 we consider all the inventive projects that might be undertaken and we compare their costs (c) against their discounted present benefits (S). Ideally society would want to undertake all project were S exceeds c . Figure 1 maps all innovative projects based on their cost, c , and their per period social benefit, v , where $S = v/r$.³⁴ The line $c = v/r = S$ divides projects socially worth undertaking from those not worth. A project lying above the line like project (v_1, c_1) is not worth it (it may become worthwhile later as its cost drops) while projects below the line like (v_2, c_2) , (v_3, c_3) , (v_4, c_4) , and (v_5, c_5) are worth undertaking.

Which Projects Do We Want to Fund?

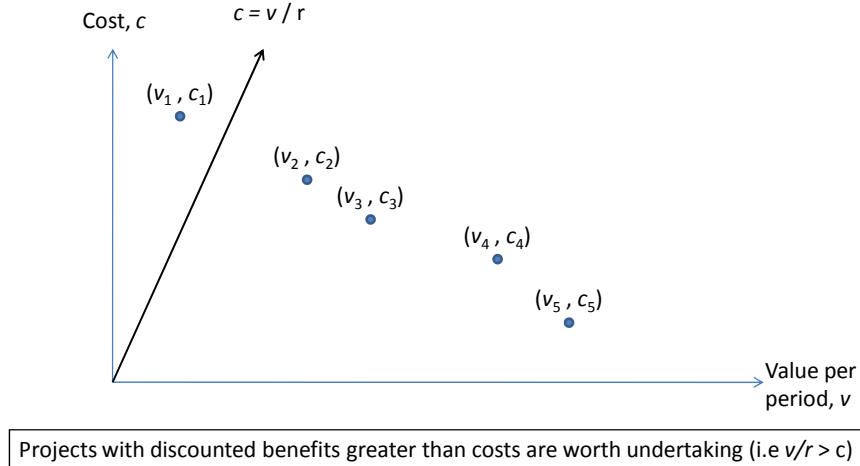


Figure 1.

Figure adapted from SCOTCHMER, INNOVATION AND INCENTIVES

³³ Much of the following discussion follows the notation from SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 98 (2004).

³⁴ Here r is the discount rate.

The Patent Incentive

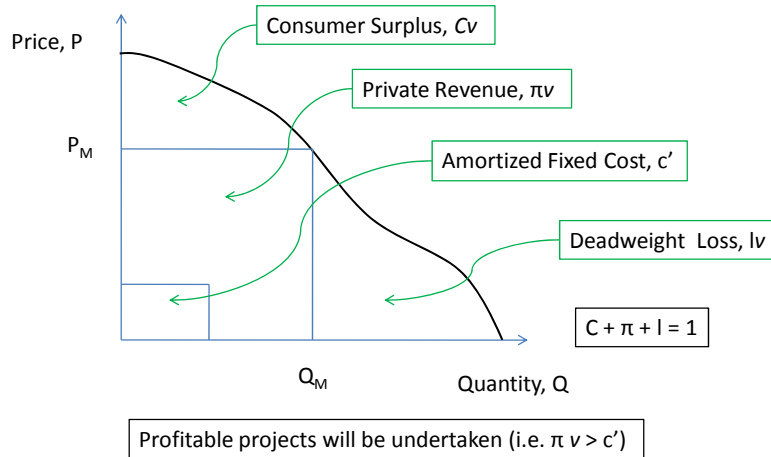


Figure 2.

Figure adapted from SCOTCHMER, INNOVATION AND INCENTIVES

The current patent system strives to grant private incentives so that private individuals will invest in socially beneficial projects. Referring to Figure 2, a demand curve is shown with the area under the demand curve, v , divided into three sections: C , the consumer surplus, π , private surplus, and l , the deadweight loss. Of the total discounted social benefit from an invention, the current patent system grants private individuals a fraction of the total social benefit equal to $\pi T v$. In other words, a patent holder can capture a fraction π of the per period social benefit, v , and can reap that fraction for a discounted time of T years.³⁵ Figure 3 shows the line $c = \pi T v$ and thus it divides privately undertaken projects (i.e. projects falling below the line like projects (v_3, c_3) , (v_4, c_4) , and (v_5, c_5)) from projects that are not privately profitable (i.e. projects falling above the line like projects (v_1, c_1) and (v_2, c_2)). Note that in Figure 3, project (v_1, c_1) is not socially beneficial and therefore we, as society members, are glad it is not undertaken but project (v_2, c_2) is different. It is a socially beneficial yet the private incentive provided by this example patent system is not enough to induce private individuals to undertake that project.

³⁵ See SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 59 (2004) for a discussion of discounted time.

Conventional View of Incentives

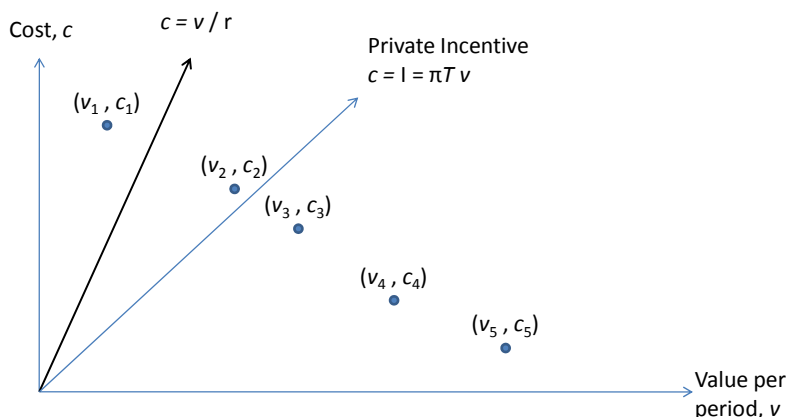


Figure 3.

Figure adapted from SCOTCHMER, INNOVATION AND INCENTIVES

In order to make project (v_2, c_2) privately viable, patent law could modulate the patent term. Figure 4 shows three curves for three different patent terms. As the patent term is extended from T_a to T_b to T_d we can see that more and more projects become privately profitable. With the patent term set to T_d we can see that project (v_2, c_2) is now a viable private project.³⁶ Thus extending the patent term makes more and more socially viable projects viable as private investments. The trouble is that as we extend the patent term we are increasing the deadweight loss for the projects. The discounted present value of the deadweight loss per project is given by lvT . Thus as we increase the patent term T , we do make more project viable but as we do so every project incurs greater deadweight losses. In short, more inventive projects will be undertaken but those who cannot afford to pay the monopolists price for any project will have to wait longer to be able to enjoy it.

³⁶ In fact if we allowed the patent term to extend to infinity then T would reach $1/r$. Similarly if we allowed perfect price discrimination then $\pi = 1$. In that situation the private incentive would equal S the social benefit for an invention. By granting the patentee the total benefit of an invention, all socially viable projects would be undertaken.

Policy Lever: Modulating the Patent Term

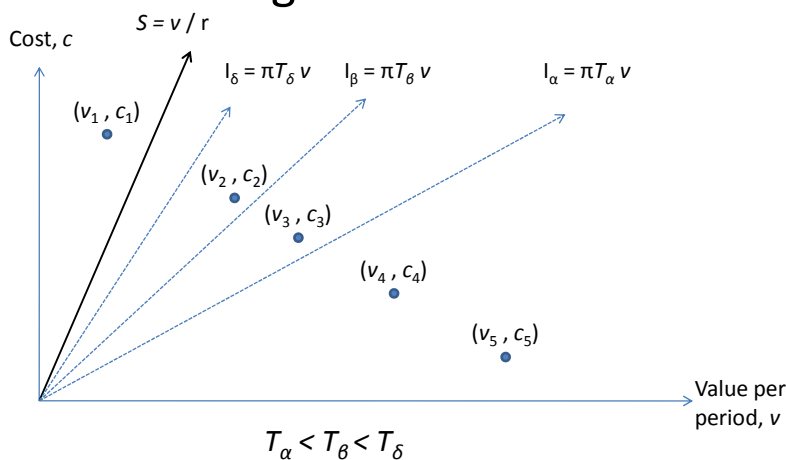
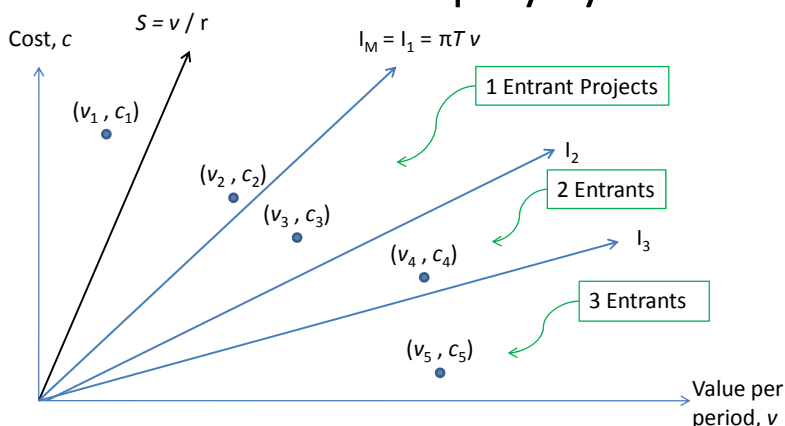


Figure 4.

Figure adapted from SCOTCHMER, INNOVATION AND INCENTIVES

This relationship is, in slightly more technical garb than normal, the access versus incentives paradox that is at the heart of most policy discussions about patents and intellectual property more generally. Once the conventional wisdom has deeply internalized this tradeoff then it becomes easy to see why a free entry system patent system might appear untenable. This incentive versus access view makes it reflexive to think that as the monetary incentive is reduced we will necessarily lose some socially desirable projects in the process. We mistakenly assume that a free entry system is the same as simply just reducing the patent term. We assume both just reduce the overall private incentive. We mistakenly assume that as a free entry system reduces profitability compared to a monopoly system then some projects must become unprofitable as a result.

A Free Entry System Funds All Projects Funded With A Monopoly System



With free entry all projects still remain profitable.

Figure 5.

Figure adapted from SCOTCHMER, INNOVATION AND INCENTIVES

In particular, we might worry the most about projects that are just barely profitable under a monopoly system like (v_3, c_3) in Figure 5. But here is where the misconception creeps in. A free entry system is not the same as simply decreasing the patent term.³⁷ It does not necessarily modulate the profitability of every project. In fact it is a noted defect of the monopoly system that “rewards” are not “tailored to expected costs.”³⁸ But that is exactly what a free entry system enables. It reduces profitability only for those projects where the reward of a monopoly system exceeds the costs to the extent that entrants can still profit by entering. For projects where the monopoly system over-rewards the inventor, entrants are attracted by the abnormal profits and they will enter until entry is no longer profitable. For a projects like (v_3, c_3) , that are just barely profitable under a monopoly system, their meager profitability make then unappealing targets for entrants. The structure of that project can profitably support only the first entrant. In other words, for such projects the free entry system effectively is a monopoly system, only one entrant will undertake that particular project. But for other projects like (v_5, c_5) that are relatively high profit versus relatively low cost, many entrants may be attracted to it. Such multiple entrants will then drive down profitability but they will not drive profits to become negative. As long as entrants have similar fixed costs to the first inventor, then they will only enter if forecast that they will make a profit. This guarantees that the first inventor will also still be profitable.³⁹

As a result, a free entry system encourages at least the same projects as would a monopoly based system and while funding the same project it tailors the reward based on the

³⁷ Figure 5 is a stylized account of a free entry system. The actual incentives depend in detail on the type of competition between entrants. Furthermore, the number of entrants and the prices as a function of number of entrants depend in detail on the shape of the demand curve for each project. Thus, even with two projects with identical cost and identical per period social benefit, depending on the details of the shape of their demand curves, these similar projects may allow for very different numbers of entrants.

³⁸ SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 59 (2004).

³⁹ This does not even account yet for the first mover advantage.

cost structure of the project. Thus although I, like Justice Story, want to make sure that inventors will still invest their time and money into inventing, a system that allows free entry from independent inventors does not dampen that incentive.

There may well be cases where entrants have much lower fixed costs and they can effectively undercut the initial inventor. If this occurs because the initial inventor picked a costly route, then this undercutting may well be a harsh but ultimately desirable result. The point is that a competitive patent system would not guarantee non-negative profits to all patent holders. A restaurant that goes out of business often reflects the poor judgment of the business rather than the failure of the economic system backing that restaurant. The patent system just makes sure that recoupment is not hampered by copying.

This suggests that the competitive system will generate *at least* the same set of inventions. Because it is a competitive system that fosters entry, the competitive system will likely generate far more than just those inventions generated by the current system. Each entrant creates their own invention. Surely some independent inventors might create very similar inventions but many will not. Such a diversity of inventions is a product of the competitive patent system and is one that is missing from the current system. Interestingly, this result seems quite odd from an incentive view. This analysis shows that by lowering the incentive, society actually gets at least the same and likely more inventions than with the current system (i.e. all the inventions it would have received plus all those created by the competitive entrants).

B. Is a Competitive Patent System Socially Desirable?

The above analysis suggests that, a patent system that allows free entry from those that incur similar fixed costs as the first inventor will not adversely impact private decisions on funding inventive projects. Entry does not impact private decisions but we, as society, also want to know if we from a free entry system. After all, even those that favor entry and competition, cannot help but look at the Warren Bridge built right next to the Charles River Bridge and ask ‘Did we really need (as a society) to expend resources on building another bridge?’⁴⁰

To decide which type of exclusion benefits society we must account for both the benefits and costs of either system.⁴¹ The economic analysis of the patent system focuses on a number of costs. The current patent system and its broad exclusive patent grant leads to deadweight costs, dynamic costs, rent-seeking costs, and as with all property systems, administrative costs. In this theoretical section, this article assumes that there are no administrative costs. The deadweight costs relate to the unsatisfied consumer demand arising from pricing above marginal cost. In other words there are consumers who would pay above marginal cost for the good but not above the price set by inventor.⁴² The dynamic costs refer to the impact that the broad patent right can have on improvements and subsequent uses of the inventions. A broad patent grant (with its injunctive relief) may include available substitutes and as a result the patentee can control future development and competition.⁴³ Lastly, the rent-seeking costs include two sources. They include the wasteful rivalry associated with chasing the patent right and they include the economic costs from the misallocation of resources to patents that has been induced by the

⁴⁰ See Michael Abramowicz, *The Uneasy Case for Patent Races Over Auctions*, 60 STAN. L. REV. 803 (2008)

⁴¹ Generally trying to account for the costs and benefits of the patent system can very hard. Here the goal is more modest. It is simply a comparative analysis of cost and benefits between the current patent system and a patent system modeled on a copyright style of exclusion.

⁴² See Liivak, *supra* note 7.

⁴³ *Id.* But see Kitch, *Prospect Theory* (suggesting that such broad patent grant is beneficial because it enables coordination for the commercialization of the entire patent prospect)

potential from sustained abnormal profits.⁴⁴ Most economic criticisms of the patent system focus on one or more of these costs. The competitive patent system reduces all three of these costs while it increases the overall expenditure on research and development.⁴⁵

This analysis is a comparative economic analysis of these two patent systems that follows the comparative analysis of monopolistic competition versus simple monopoly.⁴⁶ Monopolistic competition is “[a]n industry [where] there is free entry and each firm faces a downward sloping residual demand curve.”⁴⁷ In monopolistic competition entrants chase abnormal profits wherever they see them and the resulting entry leads to many of the economic benefits (in comparison to monopoly) associated with competition including reduced dead-weight losses, reduced dynamic costs, and reduced rent-seeking.⁴⁸ The deadweight costs are reduced because entry by competitors expands industry output and lowers prices. More consumers are able to buy the invention either from the initial inventor or from later entrants. Likewise, the greater diversity of choice reduces the possibility of hold out behavior and this reduces the dynamic costs.⁴⁹ Lastly, the rent-seeking costs are lower. As it is no longer a winner take all race, racing costs will be reduced. Furthermore, as abnormal profits are only available in the short term, long-term resource misallocation costs are reduced.⁵⁰ A competitive patent system lowers the principal economic costs of the patent system.⁵¹

Before concluding, there is one area where a competitive system does expend more societal resources than the current system. As all the entrants have their own (possibly) redundant investments in research and development, a competitive system in total spends more resources on research and development (but this is not a bad thing). Many have worried a great deal about such expenditures.⁵² But this article argues that those worries are misplaced. First, such potentially redundant spending does not concern us in the broader economy. Along these lines, Kenneth Dam has argued that

we do not normally consider the opening of a new gasoline station or grocery store near an existing one to be an example of waste, or at least not one with which public policy should be concerned [r]ather, we consider the competition

⁴⁴ See Liivak, *supra* note 7.

⁴⁵ Administrative costs are addressed later in the article.

⁴⁶ See Liebovitz, *Nonexclusive Patents System* 226 (“As a result [of allowing entry by independent inventors], patent holders may face pricing pressure throughout the term of their patents even though they have exclusive rights to a specific design or process. Competition between very narrowly differentiated patented technologies thus resembles monopolistic competition more than it does a full-fledged monopoly.”). See also Christopher S. Yoo, *Copyright and Product Differentiation*, 79 N.Y.U. L. REV. 212, 277-303 (2005).

⁴⁷ DENNIS W. CARLTON & JEFFREY M. PERLOFF, *MODERN INDUSTRIAL ORGANIZATION* 281- 317 (2d ed. 1994).

⁴⁸ See Liivak, *supra* note 7 and Liebovitz, *Nonexclusive Patents*.

⁴⁹ See Liebovitz, *Nonexclusive Patents* at 2272 (“The presence of multiple licensors typically increases the likelihood that the technology will be efficiently disseminated, since multiple firms are better able to uncover and exploit new markets for a new technology than is anyone firm on its own.”); Liivak, *supra* note 7.

⁵⁰ See Liebovitz, *Nonexclusive Patents* at 2262 (“Exclusivity thus raises the possibility-stronger when there are fewer substitutes-of inefficient allocation of resources to invention.”); Liivak, *supra* note 7.

⁵¹ Potentially redundant expenditures on research and development are the one wrinkle in this story. It is discussed below.

⁵² See Yoram Barzel, *The Optimal Timing of Invention*, 50 REV. ECON. & STAT. 348 (1968); Kitch, *Prospect Theory* at 265 (suggesting that a motive for describing his prospect theory was to respond to Barzel and to show how the patent system avoids redundant expenditures on research and development). Similar discussions exist in copyright. See Michael Abramowicz, *Copyright Redundancy*, available [ssrn](#).

induced by the new entrant to lead to a better outcome than would accrue through legal protection of the existing firm.⁵³

Furthermore, as research and development is so critical to economic advancement,⁵⁴ maybe increased spending on research and development is not so bad. Maybe having multiple, different researchers try to develop their own approach is not so horrible.⁵⁵

Second, even if we consider such expenditures as redundant, they tend to be better than granting a broad patent that effectively cuts off competition. The industrial organization literature certainly is wary of the redundant fixed cost from multiple entrants especially when an industry is producing homogenous products.⁵⁶ In other words, “[i]t can be shown . . . that, under some plausible conditions, there are too many firms in monopolistic competition equilibrium. That is, welfare could be increased by restricting the number of firms.”⁵⁷ But this is not a debate over the optimal patent system. Later work may well consider how to shape a competitive market such that entry better approximates the optimum number of entrants. Rather this present article presents a comparative analysis of a competitive system and the current system. In that regard the industrial organization literature seems to support a competitive system.

Lastly, attempts to prevent redundant research and development costs have often led to cures worse than the disease. Kitch wrote his famous paper in hopes of showing how patent law strives to limit such extra research spending. He argued that by granting a winner-take-all patent early in the inventive process, then others will not have yet invested in research and development in that area and they will essentially ‘keep off’ and will turn towards other places for their research. Kitch hoped this would reduce redundant research and development. But as was quickly pointed out, if we maintain a winner take all system that dangles the potential for substantial abnormal profits, then though pure R&D spending may not be redundant between firms, but there will still be potentially wasteful racing to obtain the patent in the first place. In other words, the racing is no longer racing to invent and commercialize but rather racing to patent. As argued by George Stigler, “[t]he prospects of monopoly pricing will lead to such a scale of investment in producing knowledge that it will return only the competitive rate of return on average.”⁵⁸ As a result many have argued that “[t]he total expenditure by firms to obtain the rent is equal to the amount of the rent.”⁵⁹ In other words, in a monopoly styled patent system with its winner-take-all feature, inventors racing to achieve the patent will expend, in total, all

⁵³ Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247, 263 (1994). *See also* Liebovitz, *Nonexclusive Patents* at 2271 (“Although rivalrous production of gasoline might result in redundant plant capacity, capitalist societies do not ordinarily discourage the construction of new plants.”)

⁵⁴ *See supra* note 14 and accompanying text.

⁵⁵ *See* Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990); Brett Frischmann, *Innovation and Institutions: Rethinking the Economics of U.S. Science and Technology Policy*, 24 VT. L. REV. 347 (2000).

⁵⁶ *See* CARLTON & PERLOFF, *supra* note 146 at 281.

⁵⁷ *Id.* at 297.

⁵⁸ GEORGE STIGLER, *THE ORGANIZATION OF INDUSTRY* 124 (1968).

⁵⁹ JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 76 (1988); *see also* Posner, R. 1975. *The Social Costs of Monopoly and Regulation*. *Journal of Political Economy* 83: 807-827 and Tullock, G. 1967. *The Welfare Costs of Tariffs, Monopolies and Theft*. *Western Economic Journal* 5: 224-232. Reprinted in *Toward a Theory of the Rent Seeking Society*, ed. J. Buchanan et al. (Texas A&M University Press, 1980).

the private monopoly incentive. Some like, Richard Posner, have argued that in all monopoly contexts that the monopoly incentive is wasted in racing to achieve the monopoly.⁶⁰

Once we make account of this cost, then a free entry system becomes clearly superior. If in the monopoly system, aspiring patentees consume all the private incentive in trying to become the actual patentee, then the total societal welfare will be the discounted value of the consumer surplus during the patent term (C_{MV}) plus the overall societal benefit v from the date of patent expiration onwards. In contrast, in the free entry system we expect entrants to expend the private surplus available with the equilibrium number of entrants. With that system, the total social welfare is the consumer surplus with the equilibrium number of entrants during the patent term (C_{FV}) plus the overall societal benefit v from the date of patent expiration onwards. Because the free entry system will always have an equilibrium price less than or equal to the monopoly price, then $C_M \leq C_F$. In other words, when we have redundant expenditures on research and development by entrants and when we have racing for the monopoly incentive, then society is better with the system of free entry.⁶¹ And there seems little social benefit from such racing.⁶² In contrast, research from multiple firms that are all headed in a similar direction is not necessarily wasteful. Different approaches and different solutions can be developed. Critically, they will likely not produce homogenous products. A diverse set of solutions will likely be produced that leads to social welfare gains from differentiated products. A competitive system seems to be able to generate at least the same set of inventions as the current system and does so at lower cost.

III. Patents, Property and Exclusion

As the moniker intellectual property implies, property analogies abound in discussions of patent law. And analogies to property have been used to rationalize the broad exclusion of patents. This section describes those arguments and shows that contrary to those approaches, as long as we ignore administrative costs, then a property centric approach to patent law directs us toward not the current patent rule but instead to the narrower copyright-styled rule.

“[P]roperty in the classic sense” is “the right to exclude from a thing.”⁶³ The right to exclude has been argued to be “the sine qua non” of property.⁶⁴ Without it, a person does “not

⁶⁰ Richard Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807, 808 (1975). Others have criticized that generalization “It is true that, as Posner says (1975, p. 812), if n risk-neutral firms each have an equal chance of obtaining a monopoly with a present value of V , each of them will be willing to spend V/n in an effort to secure the monopoly. Nevertheless, it does not follow that a total of V will in fact be spent (even apart from the question whether risk neutrality is a good assumption).” Franklin Fisher, *The Social Costs of Monopoly and Regulation: Posner Reconsidered* 93 J. POL. ECON. 410, 413 (1985). But Franklin goes on to state that “[p]otential monopolists are somewhat more likely to be on an equal footing where barriers to entry arise simply through government action than when such barriers arise for other reasons.” *Id.* at 414. Indeed, in patent law the barrier to entry is due to government action. See also Jean Tirole, *The Theory of Industrial Organization* 77-78 (1988) “The bottom line is that rent-seeking behaviors certainly waste some of the monopoly profit. That the monopoly profit may be part of the welfare loss associated with monopoly is a well-taken point. However, we should refrain from drawing any general conclusion about which fraction of the monopoly profit should be counted as a welfare loss. Only a careful description of the rent-seeking game can allow us to give an order of magnitude for this fraction.”

⁶¹ There are arguments that could be made where by the racing costs are not wasted as they tend to educate the racers. This may not change the comparative analysis though as those same benefits (if they exist) will also accrue to a free entry system.

⁶² But see generally Duffy, *supra* note 71 (explaining the benefit of patent races as leading to earlier expiration of the patent and thus the earlier the public can enjoy the inventions at marginal price).

⁶³ See Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1754 (2004).

have property.”⁶⁵ In this regard, patent law certainly looks like property. From the Constitution, to the patent statute, to theoretical discussions, patent law focuses on exclusive rights.⁶⁶ Furthermore, more literal property analogies have been drawn such as Edmund Kitch’s famous article *The Nature and Function of the Patent System*.⁶⁷ In that deservedly influential article, Kitch compared patent claims to mining prospects in order to “reintegrate the patent institution with the general theory of property rights.”⁶⁸

Some have argued that over-reliance on property analogies cause many of the recent problems with the patent system. For these property critics, property analogies certainly cannot reform patent law.⁶⁹ Any discussion of traditional property too quickly brings up Blackstone’s oft quoted⁷⁰ characterization that property grants the owner “sole and despotic dominion” over the object of property.⁷¹ Because of such absolutist visions, many have abandoned property concepts in discussing patents altogether worrying that property analogies are all too fraught with “the trap of treating intellectual property as an absolute right to exclude.”⁷²

⁶⁴ See Thomas Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730 (1998).

⁶⁵ See *id.*

⁶⁶ See U.S. Con. Art I § 8 Cl. 8, see 35 U.S.C. § 271(a) (2006) and as to scholarly discussions see Adam Mossoff, *Patents as Property: Conceptualizing the Exclusive Right(s) in Patent Law*, 7-22 available SSRN.

⁶⁷ Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J. L. & ECON. 265 (1977)[hereinafter Kitch, *Prospect Theory*].

⁶⁸ *Id.* See also Edmund W. Kitch, *Patents: Monopolies or Property Rights?*, 8 RES. L. & ECON. 31 (1986). Such views were also central to the earlier work of Giles S. Rich and his commercialization theory. See Giles S. Rich, *The Relation between Patent Practices and the Anti-Monopoly Laws*, 24 J. Pat. Off. Soc’y 85, 176-81 (1942). Rich’s theory though does not particularly emphasize the property aspects of patent law other than emphatically emphasizing patent law and its singular right to exclude others.

⁶⁹ As Stewart Sterk has argued, real property analogies have been employed precisely for their rhetorical weight by association with traditional property. Sterk, *supra* note 52 at 418 (“One might surmise, then, that introduction of the property label into copyright and patent was not accidental. Supporters of expanded copyright and patent protections invoked property terminology to seize rhetorical advantages not otherwise available.”) Likewise Mark Lemley fears that the real property analogies are used as a one way ratchet that always increases control by patent owners. Lemley, *Free Riding* at 1032 (“Protectionists rely on the economic theory of real property, with its focus on the creation of strong rights in order to prevent congestion and overuse and to internalize externalities. They rely on the law of real property, with its strong right of exclusion. And they rely on the rhetoric of real property, with its condemnation of ‘free riding’ by those who imitate or compete with intellectual property owners. The result is a legal regime for intellectual property that increasingly looks like the law of real property, or more properly an idealized construct of that law, one in which courts seek out and punish virtually any use of an intellectual property right by another.”). As a result, Lemley concludes that “treating intellectual property as ‘just like’ real property is a mistake as a practical matter.” *Id.* But Lemley does make a distinction between real property as an institution and arguments banning all free-riding. He notes that “it might be possible to rehabilitate the property analogy by disconnecting the concept of property from the arguments against externalities and free riding.” *Id.* at 1069. Even though Stewart Sterk finds the real property analogy incorrect and harmful, he concludes that “[i]t is far too late to expunge the rhetoric of property from dialogue about copyright.” Sterk, *supra* note 52 at 417. Lemley also agrees on this last point: “[w]e may have no choice” in stopping property analogies for copyright or patent. Lemley, *Free Riding* at 1069. I would agree and as this article emphasizes, a clear analogy between traditional property and intellectual property must mean a balanced intellectual property regime that embraces the variety and efficiency forced by competition.

⁷⁰ See Albert W. Alschuler, *Rediscovering Blackstone*, 145 U. PA. L. REV. 1, 30 n. 175 (1996) and Carol M. Rose, *Canons of Property Talk or Blackstone’s Anxiety*, 108 YALE L. J. 601 (1998).

⁷¹ Lemley, *Free Riding* at 1037.

⁷² *Id.* at 1072.

But such abandonment of property comes at great cost.⁷³ It inevitably means that patent law, to some degree, will always stand apart from the rest of the economy. Furthermore, it means that lessons learned from many centuries of dealing with and thinking about property are inapplicable to patents.⁷⁴ Furthermore, forsaking property misses an opportunity. There is great rhetorical force in property⁷⁵ and perhaps its use is inevitable.⁷⁶ As suggested by Stewart Sterk “[i]t is far too late to expunge the rhetoric of property from [intellectual property].”⁷⁷ Thus rather than abandon patents as property we might instead “rehabilitate” the concept of patents as property.⁷⁸ Indeed “[w]hen propertization facilitates creation of competitive markets, propertization tends to generate efficient production and development of the propertized resource.”⁷⁹ Agreeing completely with that sentiment, the purpose of this article is to explore exactly such competitive open markets for inventions created by patents as property.

Central to most discussions of property are notions of scarcity and use rights. Both of these are seemingly absent in patent law. The following section explores those issues. The next section then builds a theory of patents as property whereby both of these central notions are inherently considered. That section starts from the fundamental principle that private property exists to provide security so that property owners can allocate scarce resources and it develops the normative contours of patent law to show that rather than its current broad exclusionary rule, a property centric approach to patent law directs us instead to the narrower copyright-styled rule.

A. Where is the scarcity? Where are the use rights?

Modern patent law’s take on property has two troubling characteristics. Scarcity and use rights are important in traditional property discussions but they are hidden if not completely absent in patent law. A fundamental role for an economic system is to allocate scarce resources to productive ends.⁸⁰ An economic system determines how a society should use its scarce land, labor, and capital to meet its needs.⁸¹ Property rights are central to that objective. From Hume to Waldron, scholars have emphasized scarcity as a condition that makes property rights necessary.⁸²

⁷³ See John Duffy, *Intellectual Property Isolationism and the Average Cost Thesis*, 83 TEX. L. REV. 1077 (2007) (arguing for many benefits and insights from situating patent law more generally within property theory).

⁷⁴ *Id.*

⁷⁵ Mark Lemley, *Romantic Authorship and the Rhetoric of Property*, 75 TEX. L. REV. 873, 896 (1997) (“[I]nfringement’ may be a morally neutral term, but ‘theft’ is clearly wrong, and courts are more likely to be inclined to punish the latter.”); see also Sterk *supra* note 52 at 417.

⁷⁶ See Sterk, *supra* note 52 at 43.

⁷⁷ *Id.*

⁷⁸ See Lemley, *Free Riding* at 1069 (suggesting we change our notions of property).

⁷⁹ Sterk, *supra* note 52 at 418.

⁸⁰ WILLIAM J. BAUMOL & ALAN S. BINDER, *ECONOMICS PRINCIPLES AND POLICY* 34 (4th 1988). See also Jeremy Waldron, *What Is Private Property?*, 5 OXFORD J. LEGAL STUD. 313, 318 (1985) (“A problem, then, which I shall call the problem of allocation, arises in any society which regards the avoidance of serious conflict as a matter of any importance. This is the problem of determining peacefully and reasonably predictably who is to have access to which resources for what purposes and when. The systems of social rules which I call property rules are ways of solving that problem.”)

⁸¹ BAUMOL & BINDER, *supra* note 73 at 35.

⁸² See DAVID HUME, *AN ENQUIRY CONCERNING THE PRINCIPLES OF MORALS* 83 (Tom L. Beauchamp ed. 1998) (“For what purpose make a partition of goods, where every one has already more than enough?”); see also Jeremy Waldron, *What Is Private Property?*, 5 OXFORD J. LEGAL STUD. 313, 320 (1985) (“[t]here is, at least, no dispute between the socialist and the liberal traditions on the following points: that without some assumption of scarcity,

To allocate many scarce resources, society often turns to a specific form of property, namely private property, to accomplish this goal. Through private property, society taps one individual, the owner, to decide how to use the scarce resource.⁸³ The owner might consume the resource for private benefit; the owner might sell the resource to another; or the owner might productively consume the resource with an eye towards some new product that will be sold on the market.⁸⁴

With scarcity playing such a central role in other property discussions, property in ideas and information seems incongruent. Information and ideas are critically different from tangible resources.⁸⁵ As famously and eloquently described by Thomas Jefferson,

the moment [an idea] is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.⁸⁶

Ideas are not scarce in the same sense that an apple is scarce. If I eat an apple, others cannot use it for other purposes. If I have an idea I can share it with everyone without degrading the idea at all.

Based on this, many have argued that traditional property rationales have no place in discussing intellectual property. As argued by Arnold Plant in the 1930's and more recently as echoed by Mark Lemley, "[i]ntellectual property, then, is not a response to allocative distortions resulting from scarcity, as real property law is. Rather, it is a conscious decision to create scarcity in a type of good in which it is ordinarily absent"⁸⁷ Along similar lines, Friederich Hayek, "raised serious doubts about the equation of tangible and intangible resources."⁸⁸ Hayek argued that

[t]he difference between [copyrights and patents] and other kinds of property rights is this: while ownership of material goods guides the use of scarce means to their most important uses, in the case of immaterial goods such as literary

there is no sense talking about property and justice...."); *see also* Sterk, *supra* note 52 at ("[F]or resources that are not scarce, property rights are not necessary to promote conflict avoidance or conflict resolution."); JOHN J. SPRANKLING, *UNDERSTANDING PROPERTY LAW* 7 (1999)(quoting Jeremy Waldron)("Indeed, one scholar defines property as 'a system of rules governing access to and control of scarce material resources.'").

⁸³ *See* Larissa Katz, *Exclusion and Exclusivity in Property Law*, forthcoming U. TOR. L. REV. (2009); *see also* Henry Smith, *supra* note 75 at 1788 ("[P]roperty, by establishing boundaries over things over which decision-makers would be free to take action and prevent interference by others, was the best and only workable method to achieve a coincidence of expectations among members of society.").

⁸⁴ Jeremy Waldron, *What Is Private Property?*, 5 OXFORD J. LEGAL STUD. 313, 343 (1985).

⁸⁵ *See* discussions of public goods.

⁸⁶ Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813) in 13 THE WRITINGS OF THOMAS JEFFERSON 326, 334–35 (Andrew A. Lipscomb ed., 1903). *See also* Mossoff, *supra* note 25 at 960.

⁸⁷ Mark Lemley *Free Riding* at 1055. *See also* Arnold Plant, *The Economic Theory Concerning Patents for Inventions*, 1 ECONOMICA 30 at 36 (1934) ("It is a peculiarity of property rights in patents (and copyrights) that they do not arise out of the scarcity of the objects which become appropriated. They are not a consequence of scarcity. They are the deliberate creation of statute law; and, whereas in general the institution of private property makes for the preservation of scarce goods, tending (as we might somewhat loosely say) to lead us " to make the most of them," property rights in patents and copyright make possible the creation of a scarcity of the products appropriated which could not otherwise be maintained. Whereas we might expect that public action concerning private property would normally be directed at the prevention of the raising of prices, in these cases the object of the legislation is to confer the power of raising prices by enabling the creation of scarcity.")

⁸⁸ Peter Menell, *Intellectual Property and the Property Rights Movement*, REGULATION 36 at 40 (Fall 2007).

productions and technological inventions the ability to produce them is also limited, yet once they have come into existence, they can be indefinitely multiplied and can be made scarce only by law in order to create an inducement to produce such ideas. Yet it is not obvious that such forced scarcity is the most effective way to stimulate the human creative process.⁸⁹

Viewed from this perspective, intellectual property is viewed as suspect: scarcity is a fact of life in tangible goods and traditional property tries to make the best of it. With intellectual property we are seemingly dealing with a resource that can be shared infinitely and yet we are, somewhat surprisingly, intentionally creating scarcity in it.

In part this concern derives from an unnecessarily narrow view of property. In its most familiar modern guise, the scarce resource and the focus of property's exclusion coincide. This is often the case for scarce, tangible commodities where property is attempting to move the scarce resource to the resource's highest value user.⁹⁰ And it is this example that has become central to modern law and economics views of property but this is not the only form that traditional property takes.⁹¹ There are fundamental examples where society tries to allocate some scarce resources indirectly by giving exclusionary rights over some other (sometimes non-scarce) thing.⁹² Perhaps the oldest example of property is the usufruct in early farming.⁹³ That right likely entailed "a primary norm that entitles each family to keep the crops it has grown."⁹⁴ Critically usufructs for farming developed even when the land that was being controlled was not itself scarce.⁹⁵ For these early examples of proto-property, exclusion in land allowed for the efficient allocation of other related scarce resources such as time, labor, and scarce resources needed for farming (e.g. fertilizers).⁹⁶ This foundational example of early property was not granted in order to allocate scarce land – at the time land was not necessarily scarce. Rather, through exclusive rights to the cultivated field, property enabled society to allocate the scarce time and labor that went into cultivating the field.⁹⁷ It is this example where scarce resources

⁸⁹ *Id.* (quoting FREDERICH HAYEK, *THE FATAL CONCEIT*).

⁹⁰ See RICHARD POSNER, *THE ECONOMICS OF LAW* (describing two roles for property: the static effect and the dynamic effect. The static effect allocates resources to the highest valued user while the dynamic effect focuses on investment and development of resources). See Carol Rose, *The Shadow of the Cathedral*, 106 *YALE L. J.* 2175, 2188 (1997) (arguing the modern law and economics discussions of property "deflects attention from considerations uppermost in conventional property thinking – planning, effort, and investment.").

⁹¹ See Thomas W. Merrill & Henry Smith, *What Happened to Property in Law and Economics?*, 111 *YALE L.J.* 357, 364 (2001) ("[T]he role of property emphasized in modern economic discussions-providing a baseline for contractual exchange and a mechanism for resolving disputes over conflicting uses of resources-was at most of secondary importance in these traditional accounts").

⁹² See Smith, *IP as P* at 1745 (describing how property's exclusionary rights indirectly allocate other scarce resources).

⁹³ See Robert Ellickson, *Property in Land*, 102 *YALE L. J.* 1315, 1366 (1994).

⁹⁴ *Id.*

⁹⁵ See *id.* at 1367.

⁹⁶ See also Harold Demsetz, *Toward a Theory of Property Rights*, 57 *AM. ECON. REV.* (Papers & Proc.) 347 (1967) (describing at length the example of property in land as an instrument to enable proper allocation of fur bearing animals as well as the time and labor poured into animal husbandry. In his example there is no suggestion that land is scarce yet exclusionary rights over land are the instrumental choice).

⁹⁷ In exploring this issue Henry Smith has questioned "why we would provide for rights in information to solve this allocation problem when it would seem that we could simply give rights to appropriate the returns from these (rival) inputs like labor and lab space." Smith, *IP as P* at 1745. Smith answers that question by looking to the information cost problems that are avoided by using exclusive rights in the information. Along similar lines, the time, labor and resources that are poured into farming, animal husbandry, or inventing are consumed in those processes. The year you spend dreaming up, creating and perfecting your invention is irretrievably gone. Only the fruits of your farm,

like time and labor are allocated indirectly that intellectual property should most closely follow.⁹⁸

By way of this example, we can discern an important baseline assumption. As with these early usufructs and as with intellectual property not all land or all ideas need to be under the control of property. It is only needed where it can serve the instrumental purpose of allocating the time and labor that went into creating the ideas. When that need is not present, then our default position should be that ideas are “free as the air to breath.”⁹⁹ As will be shown below only where the creator invests scarce resources into creating the information *and* they intend to recover for those expenditures in a market should we even consider creating patents as property.¹⁰⁰

Another problem area for the property analogy is use rights. Although exclusive rights are the sine qua non of property, the purpose of such exclusion is to allow the property owner to determine the best use of some resource. Use privileges then are central to a property system as a whole even though they are sometimes overlooked because the legal part of the system often focuses only on exclusion.¹⁰¹ Such use rights are noticeably absent from modern patent law. In a forthcoming article, Adam Mossoff highlights this issue. He shows that although historically patent law explicitly granted the “‘exclusive right and liberty of making, constructing, using and vending’ an invention”¹⁰², modern patent law does not. It has lost all connection to use rights.¹⁰³

your healthy population of fur bearing animals, or your invention remain behind. Without some control (the critical question is how much and what type of control is needed) over the use of these outputs, we might not engage in these productive activities. Without some property in these outputs we would misallocate our scarce time leaving these productive activities unattended. Critical to this line of reasoning then is the understanding that exclusionary rights in the outputs are instrumental constructs tailored not so that we necessarily have “sole and despotic” dominion over the outputs but rather so that we have enough control that we properly and efficiently allocate the inputs.

⁹⁸ See Kitch, *Prospect Theory* at 275-76 (“the property rights literature has viewed the central problem as one of scarcity, while information has appeared to be an example of something that can be used without limit. There is, however, a scarcity of resources that may be employed to use information, and it is that scarcity which generates the need for a system of property rights in information”); Smith, *IP as P* at 1745. In addition to the scarcity arguments, related arguments have been made about conflict avoidance. See Sterk, *supra* note 52 at 418 (“[F]or resources that are not scarce, property rights are not necessary to promote conflict avoidance or conflict resolution.”) But this article argues that even for non-rival resources there can be conflict. At first conflict over non-rival resources seems ridiculous because these resources can be shared infinitely. But once we accept that scarce resources are often consumed in the creation of these non-rival resources and that creators hope to recoup for those consumed resources, then indeed real conflict can arise. In short, when someone’s livelihood is threatened, we can get real, physical conflict of the type traditional property attempts to ameliorate. As an example consider the relatively recent confrontation between comedians Joe Rogan and Jose Mencia that centered on Rogan’s accusations that Mencia was ‘stealing’ Rogan’s jokes. Though their resources (jokes) are the classic example of a nonrival resource, their near fist fight (for now enshrined on Youtube) closely resembles the heated emotions that run between two people arguing over alleged theft of tangibles. See Robert W. Welkos, *Mencia, Rogan ignite hot debate in stand-up world*, SEATTLE TIMES, July 30, 2007.

⁹⁹ *Intl. News Service v. Associated Press*, 248 U.S. 215 (1918)(Brandeis J. dissenting).

¹⁰⁰ See Christopher Sprigman, *Reform(aliz)ing Copyright*, 57 STAN. L. REV. 485 (2004).

¹⁰¹ See generally Katz, *supra* note 78.

¹⁰² Mossoff, *supra* note 56 at 33-34 (quoting Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 110 (repealed 1793)).

¹⁰³ *Id.* (stating that “the definition of patents as property in the same conceptual terms as land and other property entitlements—is now lost to scholars and courts because of their embrace of the exclusion concept of patents.”); see also F. SCOTT KIEFF ET AL., *PRINCIPLES OF PATENT LAW* (2008)(quoting Judge Giles Rich and his explanation of how patent law grants only rights of exclusion and therefore no use rights).

Mossoff's primary example is the blocking patent. Recalling that patent law only grants the right to exclude others from making using or selling the claimed invention¹⁰⁴, it is quite possible that the grant of a patent secures no use privileges whatsoever. An inventor can receive a patent but making or using that claimed invention might nonetheless infringe another's patent claim. Such overlapping claims are called blocking patents. Without authorization from the blocking patent owner, the inventor cannot make use or sell their invention. Many have pointed to this as a unique characteristic of patent law. For tangible property we also use strong rights of exclusion but the result is different. Generally, if I have the right to exclude the world from my land, then concomitant with that right is the privilege to use the land. But as patent law is currently configured we don't get even get such implicit use rights to our inventions. In patent law, the right to exclude is broad enough that use privileges don't necessarily exist. Mossoff points to this phenomena to demonstrate how patent law has lost sight of traditional property. As opposed to the scarcity critique, this ill-fit between traditional property and patent law does not grow from some misunderstanding of property. This is a direct result of patent doctrine and the breadth of allowable claims particularly as relating to independent inventors. As will be shown later a competitive patent system that did not ensnare independent inventors would inherently create use rights and would move patent law back toward traditional property.

Modern patent law certainly looks like property in that it focuses on the right to exclude. But in other ways modern patent law is an awkward fit for property. Many still feel that patent law creates scarcity rather than being an institution to alleviate it. And lastly, modern patent law does grant a patent owner any affirmative use privilege. These all suggest if property and its traditional link to competitive markets are to become the central focus of patent law then patent law should "rehabilitate the property analogy."¹⁰⁵

B. Property and Security: How Much Security Is Needed?

As suggested above, society aims to properly allocate scarce resources so that those resources can best benefit society. Private property enables this by providing property owners security so that they can focus on those socially beneficial plans for the resource. Property prevents acts that otherwise would endanger, spoil, or ruin, the property owner's plan for their owned resources. In short, property protects industry.¹⁰⁶ As related by Merrill and Smith, "[e]choing Hobbes's famous argument, Blackstone argued that property rights are important because they establish a basis of security of expectation regarding the future use and enjoyment of particular resources."¹⁰⁷ Likewise, Jeremy Bentham, perhaps most emphatically of all, emphasized that property provides security¹⁰⁸ so that we can confidently plan and invest in socially beneficial projects.¹⁰⁹ Property rights prevent others from taking actions that might destabilize these

¹⁰⁴ See 35 U.S.C. § 271(a)(2006).

¹⁰⁵ Lemley, *Free Riding* at 1069

¹⁰⁶ See Merrill & Smith, *supra* note 90 at 361.

¹⁰⁷ *Id.* at 361-62 (quoting Blackstone at *7).

¹⁰⁸ JEREMY BENTHAM, *THE THEORY OF LEGISLATION* 109 (1931) ("We have now arrived at the principal object of the Laws: the care of security. This inestimable good is the distinctive mark of civilization: it is entirely the work of the laws. Without law there is no security; consequently no abundance, nor even certain subsistence. And the only equality which can exist in such a condition, is the equality of misery.").

¹⁰⁹ Socially beneficial in this sense means projects that stock the store shelves with products that are in demand.

undertakings.¹¹⁰ Bentham argued that lack of property (lack of security) impacts more than just the person who is accosted. Lack of security in property will paralyze industry and force us to “exist from day to day” rather than planning and investing in future industry.¹¹¹ Insecurity “deadens[s] ... Industry.”¹¹² Property allows people to focus on productive business models; with property, people can focus on “planning, effort, and investment.”¹¹³

As to providing security over *tangible* resources, society asks a simple question from a resource owner:¹¹⁴ what acts prevent you from disposing of the scarce resource in the way you deem best? Assume you own an apple. In other words society has nominated you to choose the way in which the apple should be used. Society wants you to decide whether it should be eaten, should be made into a pie, or should be sold. You may be quite reluctant to contemplate some far off but ultimately productive and beneficial plan if you are worried about the myriad ways I might derail your plan. Property tries to prevent this type of worrying and its associated acts of self help. Property asks what security, what assurances, do you need from the rest of us so that you will stop worrying about such interferences and you will instead focus on disposing of the apple efficiently? These are the acts that property strives to prevent. For a tangible resource like an apple, there are many, many ways that others can impair your plans for the apple. Invariably, they all tend to involve some physical contact with the apple. As a result property in apples precludes others from physical contact. Because the resource is relatively fragile, property must be relatively broad and draconian – all the potential harmful acts must be prevented. As a general rule then others are not allowed to touch your apple.¹¹⁵

When this reasoning is imported into the *intangible* realm, we note an important difference. As opposed to tangibles, an owner’s plans for intangibles are rather difficult to harm. Society has put you in charge of your own time and assorted other resources (like laboratory space, word processors etc.) that are needed to create the intangibles. If you intend to invest your time and resources to create some intangible and you do not intend to sell them, then there is very little anyone can do to disrupt that plan. Others can take, share, or even try to sell copies of your intangible all they want but you still have your original intangible and you can enjoy it all you want.¹¹⁶ In that case, your plans have not been (in fact cannot be) derailed by others. Property is just not needed here.

The actions of others become relevant only when you invest time and resources to create an intangible with the intent of selling it in hopes of recouping your costs. There the actions of others can have a real impact. Others can act in ways that can derail your plan to recoup your costs. It is these derailing acts, and not much else, that should be the focus of patent law. Property in *tangible* goods has to have rather broad exclusion because there are so many different ways others can harm a tangible. For *intangibles*, there are only very specific acts that

¹¹⁰ See A. T. Nuyen, *Hume’s Justice as a Collective Good*, 12 HUME STUDIES 39, 43 (1986)(describing violations of property as violations of justice).

¹¹¹ BENTHAM, *supra* note 116.

¹¹² *Id.*

¹¹³ Carol A. Rose, *In the Shadow of the Cathedral*, 106 YALE L.J. 2175, 2188 (1996); see also CAROL ROSE, PROPERTY AND PERSUASION 3 (1999)(“[As] expressed by the eighteenth-century philosopher Jeremy Bentham: property is designed to do something, and what it I supposed to do is tap individual energies in order to make us all more prosperous.”)

¹¹⁴ For this article, we assume that society can efficiently choose an owner for important resources. See Carol Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73 (1985).

¹¹⁵ See Henry Smith, *IP as P* (arguing for broad property rule for intellectual property due to information costs).

¹¹⁶ See Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813) in 13 THE WRITINGS OF THOMAS JEFFERSON 326 (Andrew A. Lipscomb ed., 1903).

need to be addressed. In the following two different acts will be considered against the backdrop of property and competition. First, the article considers outright piracy. Second, the article considers others that independently invent. The article concludes that patent law as property should prevent piracy but it need not prevent independent invention.

The act of piracy in patent law is the copying and then selling of the invention of another.¹¹⁷ When this occurs the original inventor cannot recoup their large upfront costs. Pirates do not have similar substantial fixed costs to recoup and thus they can undercut the initial inventor. This prevents the initial inventor from recouping their investment of time and resources. In short, piracy prevents inventive business models from being feasible in the same way that theft prevents the feasible production of tangible goods. Piracy is copying that forecloses any hope of recovering the initial investment. In economic terms, unfettered piracy drives price to marginal cost. It is a parasitic act that kills its host. Such acts are described in misappropriation as acts that might kill the “goose that lays the golden eggs.”¹¹⁸ Without reasonable hope for any profit and in fact with almost certain losses, piracy deadens inventive business models. In order to provide adequate security, patent law needs to prevent piracy.

Independent inventors are critically different from pirates. Market entry by an independent inventor surely reduces the profits of an earlier inventor and in this sense independent inventors harm earlier inventors. But when independent inventors have similar fixed costs as the initial inventor then independent inventors also have to recoup these costs. As a result they do not generally undercut the initial inventor. Entry by independent inventors drives price towards average cost rather than marginal cost. This marks a critical distinction between pirates and independent inventors. Initial inventors can still profit even where independent inventors are allowed to enter the market. Independent inventors do not inherently destabilize inventive business models and in fact there are a host of economic benefits from entry by independent inventors. The economic analysis of independent invention for patents was considered in Section II.

Ultimately then a property based patent system must prevent only a small set of acts. It must prevent piracy. It need not prevent entry by independent inventors. As long as these competitors have their own comparable fixed costs to recoup then their entry into the market will not drive the price down past average cost. In this way, entry by competitors maintains the profitability for all while still providing the social benefits of competition.

IV. Comparative Administrative Costs of a Competitive Patent System

The two sections redefine what type of exclusion is needed by a patent system *as a normative matter*. A patent system should aim to exclude only copyists. It need not concern itself with independent inventors. In realigning the patent system with property and competition it is hoped that patent law can benefit from many of economic advantages offered by competitive markets.

¹¹⁷ Consider also the effect of consumers who copy the invention but who do not intend on selling it to others. Individually they cause less harm than pirates but collectively they could cause the same harm. Although there may be room for more nuanced arguments for the purposes of this article such consumer copying and using needs to also be prevented. See Sara Stadler, *Copyright as Trade Regulation*, 155 U. PA. L. REV. 899 (2008) and Shyamkrishna Balganesh, *Forseeability and Copyright Incentives* forthcoming HARV. L. REV. (2009).

¹¹⁸ Posner, *supra* note 132 at 639 (describing as the best test for misappropriation as one developed by Judge Winter as “require[ing] the court to determine, in any case that passes through his first four filters, whether ‘the ability of other parties to free ride on the efforts of the plaintiff would so reduce the incentive to produce the product or service that its existence or quality would be substantially threatened.’”)

But that discussion is theoretical; it is by itself not a patent system. With that discussion it was assumed that the law can costlessly prevent certain acts. The article now proceeds to outline the actual property rules that could be used to fulfill those normative goals and the article evaluates the administrative costs associated with them.

Rather than just relying on normative principles, a workable property system prohibits specific acts through the use of a proxy exclusionary rule.¹¹⁹ Rather than just stating that others have a duty to avoid harmful acts, property rights are a strict liability offense defined by choosing a proxy thing over which an owner is given exclusionary control. By excluding others from this thing, property indirectly prohibits those acts that might undermine the plans of the property owner. All things being equal, the acts preventing by this proxy rule should align with the acts that a normative analysis highlights. But things aren't all equal. Sometimes property chooses rules that are over or underinclusive (*i.e.* chooses proxy rules that prevent too many or too few of the normatively identified acts) because the chosen rule has superior administrative characteristics. For example, the traditional ad coelum rule¹²⁰ in real property, though over-inclusive, is quite efficient to administer. Even though it makes my walk home longer than a straight line, I can very quickly figure out the four corners of other people's property and I can relatively easily keep myself in the clear.¹²¹ The inconvenience of a longer commute is outweighed by the administrative benefits. Likewise, property owners can easily see when others have transgressed their property.¹²² And it is relatively easy to adjudicate cases of trespassing: the court simply determines if the defendant was within the four corners of property or not. Thus, even though it may prevent certain acts that do no harm to the property owner,¹²³ traditional property has nonetheless chosen the ad column rule for its administrative benefits. The key to designing a property system then is to properly define the thing so that incompatible uses are prohibited while not prohibiting other productive uses. In the following subsections, the article examines various choices of property rules and their attendant administrative costs. Critically, as has been suggested elsewhere "[t]he fundamental issue in the policy debate is neither political nor legal, but conceptual."¹²⁴ The paper considers conceptual choices for the thing at center of a competitive patent system. The article will consider a property rule excluding others from *the* invention versus excluding others from *my* invention. The slight difference between these two choices reflects an important conceptual divide over liability for

¹¹⁹ See Henry Smith, *Intellectual Property as Property*, 116 YALE L. J. 1783 (2007) ("The exclusion strategy delegates decisions about resource use to an owner who, as gatekeeper, is responsible for deciding on and monitoring how the resource will be used. To set up such rights, informational variables (or proxies) like boundaries and the ad coelum rule are used. Crossing the boundary does somewhat correlate with whether a person is imposing costs through use, but only in a very rough sense."). See also Smith, *IP as P* at 1746 ("The prototypical example is trespass to land, whereby the unauthorized crossing of a boundary serves as a (very) rough proxy for harmful use; any voluntary entry into the column of space defined by the ad coelum rule counts as a trespass.")

¹²⁰ See THOMAS MERRILL AND HENRY SMITH, *PROPERTY: PRINCIPLES AND POLICIES* 9-15 (2007).

¹²¹ See Ellickson, *supra* note 85 at 1327 n. 38 (1991) (describing self-control as "the cheapest method of social control")

¹²² See *id.* at 1327 (describing the "[g]enius of individual land ownership ... is that detecting the presence of a trespasser is much less demanding than evaluating the conduct of a person who is privileged to be where he is.")

¹²³ But see Katz, *supra* note 76 at 38 (discussing customs such as the *Allemansratt* where harmless acts such as hiking across another's property are allowed even if they violate the strict boundaries of the property).

¹²⁴ Adam Mossoff, *Is Copyright Property?*, 42 SAN DIEGO L. REV. 29, 31 (2005). Along similar lines, Justin Hughes warns "be careful that the terminology you use does not become the master of your thinking process." Hughes, *supra* note 46 at 995.

independent inventors. The former is the rule used in patent law today while the latter is a rule styled on copyright.

A. Excluding Others from *the* invention or Excluding Others from *my* invention

The current rule is the broader grant giving the patent owner rights to exclude anyone using the invention including those that independently invent it.¹²⁵ Patent law grants exclusionary rights in *the* invention and “[p]ut simply, copying is irrelevant to the issue of liability.”¹²⁶ The current rule, protecting *the* invention, conceptualizes the invention as a broad construct that stands apart from the inventor. When two inventors independently create identical devices, patent law finds that the inventors have created the *same* invention and patent law grants the exclusive rights in *the* invention only to the first inventor.¹²⁷ Such a rule does prevent piracy and therefore it is not a wholly unreasonable choice for patent’s property rule but such a rule also ensnares independent inventors. Based on the above normative discussion, such a claim is overly inclusive. As a normative matter, we need not prohibit independent inventors.¹²⁸

In contrast, the latter rule, excluding others from *my* invention, is narrower. It is always tied to its creator – its inventor. In other words, when a first inventor creates some new device she has invented *her* invention and she can claim exclusive rights to *her* invention. Such exclusive rights also prevent piracy. But when a second inventor *independently* creates a physically identical device, he creates not the same invention but rather he creates *his* invention.¹²⁹ As opposed to the broader conception currently used, this narrower conception does not impede competition from independent inventors. In such a system, independent inventors would not infringe exclusive rights in another’s invention because they are not “making, using, selling”¹³⁰ the first inventor’s invention even when their actual devices or processes are physically identical. In short, using a copyright-styled rule,¹³¹ protecting *my* invention as opposed to protecting *the* invention better fits the normative goals of a competitive market based patent system.

Furthermore, it is worth emphasizing that, even though protecting *my* invention is narrower than protecting *the* invention, both rules are property rules that grant exclusion over some thing. Critically, the narrower conception should not be thought of as just the broader conception with a defense carved out of it. In either case, patent owners would be given relatively sole and despotic dominion over some thing. The difference is whether the thing is *my* invention or *the* invention. With the narrower rule, the patent grant never even reaches acts taken by independent inventors. This distinction is important because previous attempts to introduce competition into patent law have been criticized on the grounds that they harm the

¹²⁵ See Lemley, *Proof of Copying* at 1525 (“Patent infringement is a strict liability offense. Patent law gives patent owners not just the right to prevent others from copying their ideas, but the power to control the use of their idea—even by those who independently develop a technology with no knowledge of the patent or the patentee.”)

¹²⁶ Lemley & Cotropia, *Copying in Patent Law* at 4.

¹²⁷ See 35 U.S.C. § 102 (2006).

¹²⁸ See *supra* note 7 for previous discussions of an independent invention defense.

¹²⁹ A very interesting question is whether this second inventor could ever patent *their* invention. This paper focuses on issues of infringement and leaves such interesting questions of patentability for another day.

¹³⁰ 35 U.S.C. § 271(a).

¹³¹ Lemley & Cotropia, *Copying in Patent Law*, 6 (“actual copying is still a fundamental first step to determining copyright infringement.”).

alienability of the patent right¹³² or that they create a non-exclusive patent system.¹³³ By granting exclusive rights to *my* invention, the patent system can introduce more of the benefits of open market competition to patent law while still using a robust property rule. An exclusive patent right can provide security against piracy while allowing competition. This is critical conceptual change that avoids the criticisms leveled at previous attempts to align patent law with competition.¹³⁴

Finding that the narrower conception better aligns with the normative goals of a competitive patent system surely gives that rule a large comparative edge over the current broader rule especially as it affords so many of the economic benefits of competition. But that alone does not necessarily mean that the better tailored rule should be chosen. Traditional property is over inclusive in places. We allow real property owners to prevent all trespassers independent of whether their actions would have actually caused any harm to the property owner or her intentions for the land. As was suggested above, such an over inclusive rule can be justified by superior administrative costs. Thus before concluding that a competitive patent system should grant rights to *my* invention, the article must consider the relative administrative costs of these two property rules.

The relevant administrative costs are the public's self enforcement cost, owner's monitoring costs, and the adjudication costs.¹³⁵ The self-enforcement cost is the cost that the public must bear in trying to respect a certain property rule. Monitoring costs are cost incurred by the property owner in monitoring whether anyone has trespassed onto the property. Lastly, the adjudication costs are the costs borne by the courts in trying to adjudicate a particular property rule.

As to adjudication and monitoring, these costs are likely higher in protecting *my* invention than in protecting *the* invention. When an inventor sees a competitor performing the patented process or building the patented machine, the inventor cannot easily tell if the competitor simply copied the invention (i.e. infringed) or if the competitor independently created the invention (not infringed). For similar reasons, adjudication costs would also be higher because courts would have to deal with the difficult evidentiary distinction between copying and independent invention.¹³⁶ In fact, both judges and scholars have worried exactly about such higher adjudication costs and have concluded that requiring proof of copying was too expensive and difficult to administer.¹³⁷

¹³² Lemley, *Proof of Copying* at 1531 (“It is much easier to sell a right of absolute exclusion than a right of control that is potentially defeasible based on information—the fact of independent invention—that the patentee is unlikely to have at the time of the sale.”)

¹³³ Leibovitz himself titles his proposal as a nonexclusive patent system. See Leibovitz, *Nonexclusive Patents*. As this article shows similar competitive benefits can be generated by an exclusive patent system as long as we re-conceptualize what thing over which patent law grants sole and despotic dominion.

¹³⁴ Roger M. Milgrim, *An Independent Invention Defense to Patent Infringement: The Academy Talking to Itself: Should Anyone Listen?*, 90 J. PAT. & TR. OFF. SOC'Y 295, 304 (2008).

¹³⁵ See Lemley, *Free Riding* 1058; Dam, *supra* note 155 at 249

¹³⁶ See Douglas Lichtman, *Copyright as a Rule of Evidence*, 52 DUKE L.J. 683 (2003); Henry Smith, *IP as P*, 1810 (citing Norman Siebrasse for the point that “a defense of independent creation makes protection of the original more costly”). For a judicial opinion that focuses on difficulties in identifying independent creation in stuffed animals see *Ty, Inc. v. GMA Accessories, Inc.* 132 F.3d 1167 (7th Cir. 1997).

¹³⁷ Posner, *supra* note 132 at 626 (“What tips the balance against an independent-discovery defense, however, is the difficulty of determining independent discovery by the methods of litigation and the resulting likelihood that the courts would commit many errors in adjudicating patent infringement claims in cases in which independent discovery was the defense.”)

But other judges, like Learned Hand, were not daunted by the adjudication costs. In recommending a copyright-like scheme for patent law, Learned Hand acknowledged the evidentiary problems and he suggested solving them by placing the burden¹³⁸ of showing independent invention on the defendant:

[y]ou might say it would be very difficult for the patentee to ever prove that the supposed infringer had copied. Well, there are various devices that I think might be arranged to meet that. If the patentee brought the infringer to court and showed the infringer was making the same thing, you might throw the burden on the supposed infringer to show that he did not have to have recourse to the patent in order to do what he did.¹³⁹

This leaves the issue of adjudication and monitoring muddled. The gathered wisdom Judge Posner and other scholars seem to suggest that a rule protecting only *my* invention would have higher costs but this is counterbalanced by Judge Hand's suggestions that procedural details could ameliorate those worries. But we must still consider the last major, and likely most important, administrative cost – the self-enforcement cost. And curiously it is an issue that has been rather ignored in the previous debates over independent invention

Self-enforcement is critical to a well functioning property system. It is, as described by Bob Ellickson, “the cheapest method of social control.”¹⁴⁰ Property generally is not just about drawing some arbitrary line that the government will enforce.¹⁴¹ For a property system to work efficiently, the rest of us, all of those who will owe the property holder duties to stay off must be willing to do our part – we must first understand the boundaries and then we must be willing to respect them. A property system can achieve great gains in efficiency when people generally understand and respect property boundaries themselves without the need for repeated government coercion. Therefore, the chosen property rule must also be cheap and easy to understand and obey.¹⁴² This asks can we (the public) understand the rule. Furthermore, the public must be willing to self-enforce the rule. As argued by Carol Rose, “[p]eople have to accept property for it to work in any meaningful way. And, very often, they do, relieving owners of the onerous necessity to guard their things all the time.”¹⁴³

Self-enforcement costs are important because they retain a primacy over all the other administrative costs. If the public can cheaply understand a property rule and if they in fact abide by that rule, then the other administrative costs become less relevant. If we all abide by a property rule, owners need to do less monitoring and adjudicating. Of course there exists a complex dynamic relationship between these costs but nonetheless high levels of self enforcement by the public does lead to low overall administrative costs. And it is in considering self enforcement costs that protecting *my* invention rather than *the* invention shows promise.

Patent law has difficulties in this regard. The scope of modern patent claims is unique among intellectual property systems. They extend liability to even those that independently invent the claimed subject matter. In the incentive view this is just seen as one way to generate the needed incentives. But when we consider public acceptance of property, this feature is odd

¹³⁸ More recently, others have also suggesting solving these evidentiary problems through burden shifting. See Liebovitz, *Nonexclusive Patents* at 2276 (“Placing the burden of proof on the defendant in an infringement action must be the bedrock of any nonexclusive patent system.”)

¹³⁹ Hand on Patent Reform at 114.

¹⁴⁰ Ellickson, note 85 at 1327 n. 38.

¹⁴¹ Thomas Merrill & Henry Smith, *Morality of Property*, 48 WM. & MARY L. REV. 1849, 1853 (2007).

¹⁴² Merrill & Smith, *supra* note at 1853 (“Because property rights need to coordinate the behavior of large numbers of unconnected people, they must be easily comprehended and must resist possible misinterpretation.”).

¹⁴³ Rose, *supra* note 15 at 1925.

or at the very least difficult to rationalize. As opposed to other property system, our modern patent system is particularly expensive for the public to respect. There are no clear boundaries or clear activities that indicate to the otherwise law abiding public that they are about to infringe a patent right. Because independent infringers are liable, a researcher who never relies on others can still infringe many patents. Thus, to steer clear of liability the public must keep abreast of each and every patent claim. This puts a very costly burden on the public. Patents are complicated and their claims are notoriously difficult to delineate with precision. Likewise there are just a whole lot of them. In the last hour, on average, eighteen patents issued that you haven't read yet.¹⁴⁴ When you wake tomorrow 144 new patents await you.¹⁴⁵ When are you planning on reading them? You, like the rest of us, will own these patent holders the duty to refrain from infringing their rights. Likely you can dismiss many of them quickly but even so how long will it take? And what do you do if one looks reasonably germane? Patent attorneys charge about \$50,000 for an infringement opinion letter. There are no easy, cheap rules that help us determine when we might be infringing someone's patent. Even if we want to abide by the current patent system, it is structured to make it very costly to do so.

Just as importantly, it is questionable if many feel they *should* abide by the current patent system. Observance of property has long been associated with widely held norms or morals. A property system that is aligned with some common norms will generally benefit from increased acceptance and decreased enforcement costs. As argued by Thomas Merrill and Henry Smith this happens when “the morality upon which [property] rests [is] simple and accessible to all members of the community.”¹⁴⁶ Loosely this means that the nature and breadth of the property right must be generally acceptable to the public. On this score the current patent system also fairs poorly. Because patent claims reach those that have no connection to the initial inventor, it is hard to establish any direct harm caused by independent inventors – they have no connection to the initial inventor. Mark Lemley recognizes this disconnect in patent law stating that “those not schooled in patent law would likely find it odd that a patent not only prevents the imitation of the patentee's technology but also limits the ability of inventors to develop and market their own technologies.”¹⁴⁷ He argues that, in contrast to the breadth of current patent claims, “[non-infringement for independent inventors] comports with our sense of equity.”¹⁴⁸ As quoted in the introduction, Learned Hand makes exactly this same point. He argues that patents could “avoid a great deal of the animosity that has surrounded”¹⁴⁹ them by giving inventors only “what [they] contributed ... and unless [others] used what [they] did, [they] could not stop it.”¹⁵⁰ By choosing broad exclusionary rules that tend to defy our expectations about property, patent law may be slowing its broad acceptance and may be making patent administration overly costly.¹⁵¹

When patents only protect *my* invention then the costs of self-enforcement are lower because a relatively easy to follow rule emerges: if you use your own, independently created work then you are safe and you need not worry about patent infringement; if you rely in part on the

¹⁴⁴ Between February 14, 2006 and July 15, 2008, the PTO issued 400,000 patents.

¹⁴⁵ Patents don't issue from the PTO in the middle of the night. They actually only issue on Tuesdays.

¹⁴⁶ *Id.* at 1850.

¹⁴⁷ Lemley, *supra* note 37 at 1526.

¹⁴⁸ *Id.*

¹⁴⁹ Hand on Patent Reform at 114-15.

¹⁵⁰ *Id.* at 117.

¹⁵¹ Lack of acceptance leads to both instability as an institution. See Thomas Merrill & Henry Smith, *Morality of Property*, 48 WM. & MARY L. REV. 1849, 1854 (2007); Carol Rose, *The Moral Subject of Property*, 48 WM & MARY L. REV. 1897, 1908-09 (2007).

patented work of others without authorization, then you need to be more careful; and if you simply copy patented material then you are infringing. Without any costly searching I can know when I can operate freely, when I need to be careful, and when the law prohibits my actions.

Returning for moment to the other administrative costs, even if protecting only *my* invention has higher monitoring and adjudication costs on a per case basis, such a system would likely have significantly lower overall self-enforcement costs. In a recent article, Mark Lemley and Chris Cotropia reported that if “a patent infringement system ... punished only copying [then] ... [n]inety percent of patent lawsuits would go away.”¹⁵² This lends empirical support to the notion that even if adjudication costs were higher per case with the narrower system (which I don’t necessarily think is true and Learned Hand things we could fix anyways), society may well spend less on administering a competitive system because overall there may be fewer patent cases.¹⁵³

Again, it is hard to conclusively determine whether one rule is superior to the other in regards to administrative costs.¹⁵⁴ Answering that question requires (and deserves) a more thorough empirical exploration. But this article emphasizes that self-enforcement is critical to an efficient patent system and self-enforcement has not been widely considered in the patent context. Furthermore recall that the narrower rule, protecting only *my* invention, fit better with the normative goals of a competitive patent system. The narrower rule has significant advantages in that it provides the same set of inventions as would the broader rule but it does so while giving all the social benefits of competition. In other words, absent a strong case for administrative costs, the balance favors the narrower rule.

A natural question is whether patent law could ever really adopt such a rule. Others have argued that such a narrow rule would be historically unprecedented.¹⁵⁵ As the influential treatise Robinson on Patents makes clear:

To one who has conceived and practically applied a new idea [patent law] gives the power, not only to prohibit other men from copying after him, but from inventing and applying the same idea for themselves. It recognizes no difference between the piracy of an invention by the willful injurer and its entirely independent generation by a true inventor.¹⁵⁶

But influential figures remained undaunted. Learned Hand felt there would be no “constitutional difficulty ... [in limiting patent infringement] to those who could be shown to have copied what the inventor did.”¹⁵⁷ The Constitution explicitly grants “Inventors” “exclusive rights” in “*their* ... discoveries” just as “Authors” are granted “exclusive rights” in “*their* ... writings.”¹⁵⁸ If copyright can adopt a rule that requires copying then there can be no doubt that patent law could as well. And though it is outside the scope of this article, it may well be worth pursuing what

¹⁵² Lemley & Cotropia, *Copying in Patent Law* at 45.

¹⁵³ This does not mean that patents are less important in a competitive system. Instead there is just less fighting over patents and the public generally knows how to behave without court intervention.

¹⁵⁴ This article focuses on what scope is needed for infringement. Once we consider the novelty requirement, then protection for *my* invention becomes more difficult as subsequent inventors will not be able to patent their inventions. This may be suitable as very few will in fact create exactly the same thing but such details need to be considered further.

¹⁵⁵ See Lemley, *Proof of Copying*, 1525 (stating that infringement by independent inventors is a power “that patentees have had, with rare exceptions, since the inception of the Republic.”).

¹⁵⁶ WILLIAM C. ROBINSON, I THE LAW OF PATENTS FOR USEFUL ARTICLES 45 (1890).

¹⁵⁷ Hand on Patent Reform at 114.

¹⁵⁸ U.S. Con. Art I. § 8 Cl. 8.

constitutional limits the word “their” puts on the type of exclusive right patent and copyright could grant.

Lastly, another development favors the narrower rule. There has been a tremendous surge in interest in non-market modes of production.¹⁵⁹ Through the success of Linux and Wikipedia, peer production has provided an interesting counter point to the traditional focus on market-centric production. These early examples deal with copyrightable subject matter but recently there has been a surge in interest in developing a similar peer produced commons in various areas of patentable subject matter.¹⁶⁰ One stumbling block for expanding peer production to patentable subject matter is the difference between the reach of copyright versus patent claims. Because copyright claims cannot reach beyond copyists, a peer produced commons cannot be touched by outside copyright claims if the authors independently create the works they put into their commons. As has been discussed above, modern patent claims reach beyond just copyists. Thus, members of a commons of independently created patentable subject matter cannot be sure that they can in fact use their commons. If their pooled materials infringe someone’s patent, then that patent holder could prevent the full enjoyment of the pooled resources potentially defeating the purpose of the pooling. This worry substantially disappears when patent law curbs the reach of its claims. Where patent law only grants exclusion over *my* invention, then an independently created pool of patentable subject matter cannot be impaired by third party patent claims. The creators of the pool are free to use their common resource. This is not to say that such peer production is necessarily better or worse than market production. But by designing the patent system carefully, we can have both. Inventors can choose which mode of production they want to use.

V. Conclusion

A patent rule that protected *my* invention as opposed to the current rule seems to have many benefits. It better fits the normative goals of a competitive system. It brings with it the economic benefits of open markets and it does not impact the decrease (in fact may increase) the types of inventions that get created. It could improve the overall acceptance of patent law¹⁶¹ and it could bring patent law closer to traditional property law. The current broad rule is such a visible and significant aspect of patent law that it needs far better support.

As it would be a big change and we should move carefully. As suggested by Lemley and Cotropia, “[a] patent infringement system that punished only copying would look dramatically different than current law.”¹⁶² Likewise, though he suggested the copyright-like scheme for patent law, when pressed to testify as to “what Congress .. should do”¹⁶³ even Learned Hand warned that “[u]ntil we have a thoroughgoing investigation [of the patent system], it is all going to be guesswork”¹⁶⁴ With that caution this article puts its analysis forward while acknowledging that the topic needs more, likely empirical, analysis.

¹⁵⁹ See YOCHAI BENKLER, *THE WEALTH OF NETWORKS* (2006).

¹⁶⁰ See Peter Lee, *Contracting to Preserve Open Science: Public Norms, Private Ordering, and the Creation of a Biomedical Research Commons*, forthcoming EM. L. REV. (2009).

¹⁶¹ The narrower rule would limit the impact of so-called patent trolls.

¹⁶² Mark Lemley & Chris Cotropia, *Copying in Patent Law* at 45.

¹⁶³ Learned Hand of Patent Reform at 118(Senator O’Mahoney).

¹⁶⁴ Learned Hand on Patent Reform at 118.