Costly Screens, Value Asymmetries, and the Creation of Intellectual Property

David Fagundes and Jonathan Masur

ABSTRACT

Copyrights arise the moment an author fixes a work in a tangible medium of expression, costlessly and immediately. Patents, by contrast, arise only after an applicant successfully navigates a cumbersome examination process. Numerous writers have critiqued the resulting proliferation of copyrights as excessive, in some cases arguing for more formalities in order to restrict the ease of copyright vesting. The patent examination process has drawn criticism as costly and ineffective—in contrast to copyright, too laden with formalities. In this paper, we focus on process costs (or lack thereof) to show that these very different means for acquiring intellectual property rights may be more optimal than is generally believed. The high costs of navigating the examination process deter would-be patentees who expect their property rights to generate only low private value. Moreover, due to an important asymmetry among the social and private value of patents, the costly screen is likely to select against socially harmful patents in disproportionately high numbers. The examination system thus eliminates patents that create low social value while creating no risk of eliminating patents that generate high social value. Copyright is characterized by just the opposite asymmetries. Because there are numerous works that generate high social value but low private value, the impact of costly screens would be to preclude the production of many of the publicly beneficial works that copyright is designed to create. In addition to providing a positivist explanation for why the patent and copyright systems differ, this application of costly screen theory also points in the direction of what we call a unified theory of IP process. This theory illuminates the essential connection between the statutory construction of exclusive rights in information necessitates particular processes by which those rights vest.

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INTRODUCTION: THE PATENT/COPYRIGHT PUZZLE

Copyrights vest the moment an author fixes a work in a tangible medium of expression. Acquiring this exclusive right takes place instantaneously, costlessly, and often unintentionally, whether the work at issue is a multi-million dollar motion picture or a doodle penned on the back of a cocktail napkin. Patents, by contrast, vest only after an applicant successfully negotiates an extensive examination process. While the vast majority of patent applications are granted, the process associated with these applications is costly and cumbersome.

The stark difference between the ease with which copyrights vest and the difficulty with which patents arise seems puzzling in many respects. There is no necessary theoretical difference between copyrights and patents (although Congress has constructed many substantive differences pursuant to its constitutional authority to do so). Indeed, the initial processes for acquiring copyrights and patents established by the first Congress looked more similar than they do today. Copyrights then arose only upon successful registration and compliance with attendant formalities, while patents were granted by members of the Patent Board, an early precursor of the examiners in the modern-day PTO.

The variance between processes associated with patent and copyright vesting is puzzling. But each of these processes has met with significant criticism on their own terms. Some writers have decried the ease with which copyrights vest, arguing that the "fixation in a tangible medium of expression" standard results in an excessive and suboptimal proliferation of protected works of authorship. Among various solutions proposed for this purported problem include the reintroduction of formalities in order to raise the costs associated with copyright vesting. Critiques of the patent process invoke just the opposite concern. Many (perhaps most) believe that the examination process exacts exorbitant costs, while failing to provide meaningful substantive review of proposed patents.

In this paper, we use the idea of process costs to both provide a positive explanation of the difference between the way patents and copyrights vest, and also to draw into question the prevalent critiques

of each vesting system. Our argument proceeds from the proposition that intellectual property generates two kinds of value: private value to the patent or copyright owner, and social value to the public at large. Importantly, though, the subjects of these exclusive rights do not necessarily generate private and social value in identical amounts. This results in distinctive patterns of value asymmetries between copyrights and patents. The broad property rights conferred by the Patent Act, for example, result in numerous patents that generate high private value but only low social value, but no (or very few) patents that generate high social value but only low private value. These value asymmetries are reversed in the copyright context. Copyrights frequently generate high social value but only low private value, but never (or rarely) generate high private value but only low social value.

These very different value asymmetries help explain why costly screens generate benefits for patents, but would exact social costs for copyrights. Costly screens deter would-be owners of intellectual property from acquiring exclusive rights when the predicted value of those exclusive rights is lower than the process cost imposed by a screen. In the patent setting, the effect of costly screens is to eliminate all low private value patents. The elimination of low value patents that also generate low social value represents a welfare gain. And while the elimination of low value patents that also generate high social value would represent a possibly offsetting welfare loss, this is not a relevant concern since there are no patents that fall into this latter category. Costly screens would have a very different effect due to the inverse value asymmetries that characterize copyright. Imposing process costs would eliminate copyrights that create both low private value and low social value, but they would also reduce the creation of copyrights that produce low private value but high social value. Since the former group of copyrights is relatively innocuous, the social welfare impact of imposing costly screens as a prerequisite to copyright vesting would likely be negative.

Costly screen theory thus provides a positive explanation for the somewhat puzzling divergence between the ways that patents and copyrights vest. It also illustrates at least one reason why the prevalent skepticism that surrounds both the ease with which copyrights arise and the cumbersome patent examination process may be unfounded. We seek to draw one more insight from costly screen theory,

proposing a unified theory of IP process. The impact of costly screens on the creation of intellectual property depends on the statutory construction of those rights. The breadth or narrowness of a property right in information creates value asymmetries that interact either beneficially or harmfully with costly screens. The scope of exclusive rights thus determines the kind of process that should be used as a prerequisite for those rights' vesting.

Our argument proceeds in four parts. In Part I, we introduce the idea of costly screens and illustrate their potential to generate typically overlooked social costs and benefits. In Part II, we build on previous work to apply this theory to patent, showing how the cumbersome examination process generates unappreciated advantages due to the distinctive value asymmetries characteristic of the patent system. In Part III, we turn to copyright, and illustrate how the very different value asymmetries that characterize that system would make the imposition of costly screens unwise. Finally, in Part IV we reflect on the implications of this argument for various debates surrounding intellectual property, and propounding a unified theory of IP process that shows how the construction of private rights in information necessitates particular kinds of procedures to govern the vesting of those rights.

I. THE OVERLOOKED SOCIAL VALUE OF COSTLY SCREENS

A. The Social Cost Fallacy of Conventional Accounts

Consider an activity, such as the production of some good, that creates a private benefit *b* for a firm (or individual) and a social cost *c*, such as by generating pollution. Imagine that *c* equals -10, and that *b* can range from zero to 100. For ease of explication, we assume here that the externalities produced by the firm are entirely negative, and that the firm's profits are fully part of the social welfare function, such that social welfare is equal to $b + c$ (here, $b - 10$). [1] (We relax these

[1] Note that here we describe the social value of an activity as the sum of private benefits and social costs. In later sections we will refer to the social value of an activity (or an intellectual property right) explicitly because it is easier to obtain information regarding that quantity directly. This change is unimportant theoretically; we only mean to guard against confusion on the part of the reader when we adjust the reference in Part II.

assumptions at a later point.) A government or social planner seeking to maximize social welfare would obviously like to permit the firm to produce the good (and pollute) only when $b > 10$. If the government possessed full information, it would simply prohibit the firm from producing when $b < 10$ and allow it to produce otherwise. However, b is frequently private information, available to the firm but costly for the government to discover. Accordingly, governmental procedures ostensibly designed to ascertain b are often expensive for the firm to comply with but serve little informational purpose—they do not reveal b. In these instances, they are best understood as costly screens.

As a class, costly screens are a well-understood economic phenomenon. An actor—private or governmental—must pay some upfront cost in order to take a particular action. This cost is usually to no particular end—it does not purchase anything of value for the actor (or the recipient) other than the right to take the action. But it serves to screen out a set of actions that are not sufficiently valuable to the actor. If the actor cannot reap private benefits in excess of the screen, it will not take the action. Consider, by way of example, the firm from the preceding paragraph. Suppose that the firm must apply for a pollution permit before it is allowed to emit the pollution that accompanies production of the good. Suppose that the permitting process requires that the firm fill out numerous forms and hire an independent inspector to test the chemical composition of the firm's emissions, at a cost to the firm of 10. The firm will not apply for the permit (and will presumably choose not to pollute) unless the private benefit to the firm from doing so (net of other costs) exceeds 10. The permitting process thus acts as a costly screen against actions that are worth less than 10 to the emitting firm.

Legal scholars have frequently used costly screens to model the procedural steps that both private firms and government actors must take before proceeding along some course of action. Underlying many of these models is the frequently explicit, occasionally implicit notion that costly screens can enhance social welfare if they select against socially harmful activities. Here, the social cost of pollution (c) is -10. Imagine that the private benefit to the firm (b) from production of the good is 5. The overall effect of allowing the firm to produce is to diminish social welfare by 5 (-10 + 5 = -5), but absent any sort of screen the firm will choose to produce because it does not

internalize the social cost of pollution (by assumption). If, however, the permitting process imposes a private administrative cost (a) on the firm of -10 (a costly screen), the firm will only choose to produce when its private benefit from doing so is greater than 10. If $b > 10$, then $b + c > 0$ (i.e., $b + (-10) > 0$) and so the overall social welfare effect of allowing the firm to emit (namely, $b + c$) is positive. If $b < 10$, the firm will not choose to produce. The costly screen will induce the firm to refrain from producing when the effects on social welfare would be negative ($b + c < 0$).

Yet this standard law and economics account of a costly screen fails to account for the social cost of the screen itself. In the above example, and in many standard legal accounts of costly screens,[2] the screen is imposed in the form of transaction costs that the actor must pay—here, the filling out of forms and hiring of an independent inspector. These transaction costs count against social welfare just as much as does the released pollution itself. Consequently, in this example the overall social welfare effect of a firm's pollution is actually $b + c + a$. If $c = -10$ and $a = -10$, then the total social cost of production is actually 20, not 10. Because the firm still only internalizes a, and not c, it will choose to pollute whenever $b > 10$. The firm's decisions are divisible into three categories, depending on the value of b:

1) $b < 10$

   The firm chooses not to pollute. Here, the costly screen is welfare-enhancing, because it avoids welfare-diminishing pollution.

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[2] *See* Matthew C. Stephenson, *A Costly Signaling Theory of "Hard Look" Judicial Review*, 58 Admin. L. Rev. 753 (2006); Hans Gersbach, *The Money-Burning Refinement: With an Application to a Political Signaling Game*, 33 Int'l J. Game Theory 67 (2004); Eric A. Posner, *Controlling Agencies with Cost-Benefit Analysis: A Positive Political Theory Perspective*, 68 U. Chi. L. Rev. 1137, 1160–61 (2001); Joseph Stiglitz & Andrew Weiss, *Sorting out the Differences Between Screening and Signaling Models*, *in* PAPERS IN COMMEMORATION OF THE ECONOMIC THEORY SEMINAR AT OXFORD UNIVERSITY (Michael Dempster, ed.) (1989); Paul Milgrom & John Roberts, *Price and Advertising Signals of Product Quality*, 94 J. Pol. Econ. 796 (1986); Michael A. Spence, *Job Market Signaling*, 87 QUART. J. ECON. 561 (1973).

2) $10 < b < 20$

The firm chooses to pollute, even though the social cost of doing so ($a + c = -20$) is greater than the social benefit. The transaction cost of the costly screen has turned what would otherwise be a productive activity (because $b + c > 0$) into a detrimental one.

3) $b > 20$

The firm chooses to pollute, and this decision is social-welfare enhancing ($b + c + a > 0$). However, it is not as beneficial as it would be if the costly screen did not consume 10 units of resources.

To summarize: in Category 1 situations the costly screen is welfare-enhancing; in Category 2 and 3 cases it is welfare-diminishing; and in Category 2 cases the firm's activity is itself welfare-diminishing. There is no avoiding the mathematics of this simple-form costly screen: the cost of the screen is equal to the social welfare benefit it provides in blocking.

If the screen could be targeted at only those firms or situations in which $b < 10$, it would have an undeniably positive effect. But the underlying premise of the costly screen is that b is private information, unknown to the policymaker. Consequently, in most situations the policymaker must either apply it to all firms within a class or none. Precisely because of the cost of the screen itself there will always be situations in which firms have incentives to take welfare-diminishing actions (Category 2), and other situations in which firms will take welfare-enhancing activities that would be *more* welfare-enhancing absent the screen (Category 3). On this accounting, the efficacy of any given costly screen appears highly questionable. It depends substantially upon the distribution of values of b: will the screen's value in eliminating socially harmful activities exceed the extent to which it runs up the costs of socially beneficial activities? This is information that may not be available to the policymaker ex ante. If the governmental planner has little information regarding the range of values of b and c, costly screens will function only as an awkward and potentially harmful tool of social policy.

B. Screens as Useful Devices

If costly screens are to serve some useful function,[3] they must be structured such that they are guaranteed to generate social welfare benefits beyond the transaction costs they impose.[4] As the previous section notes, this will require the government to have some information regarding the distribution of benefits and costs among the variety of potential activities. The problem, of course, arises from the fact that the government does not know ex ante the benefits or costs of any particular firm activity (or else it would simply ban those

[3] Of course, in many cases the costs underlying a costly screen will be generated by some otherwise productive activity—the installation of pollution-controlling technology, for instance. In these cases, the substantive benefit of the underlying activity may itself outweigh the deleterious effects of the screen itself. Here, we focus on the screen alone and ask under what conditions it increases social welfare, any benefit from the substantive activity aside.

[4] The first and most obvious is simply to replace the administrative activity that constitutes the costly screen with a monetary fee. Rather than fill out a series of forms or pay for an inspection, the polluting firm could simply pay a fee to the EPA for the right to pollute. That fee would not be consumed by transaction costs and would not count against social welfare; it is merely a transfer of wealth from the polluting firm to the government. (The government could then turn around and redistribute the wealth to other productive firms or to the populace at large.) In this form, the costly screen is equivalent to a Pigouvian tax, a tax set at the level necessary to force firms to internalize the full cost of their activities (here, the cost of pollution). Pigouvian taxes can be efficient mechanisms for curing market failures, and they might be usefully deployed in a number of contexts.

However, it is often difficult for the government to correctly price such a tax. John A. Rothchild, T*he Social Costs of Technological Protection Measures*, 34 FLA. ST. U.L. REV. 1181, 1211 (2007) (arguing that a disadvantage of Pigouvian taxes arises from the government's inability to accurately measure negative externalities); Douglas A. Kysar, *Law, Environment and Vision*, 97 NW. U.L. REV. 675, 687 (2003) (noting that Pegouvian taxes are disfavored because of the insurmountable informational demands they place on regulators). The government may lack good information regarding the true cost of firm activity, and it may be difficult for the government to monitor the firm's activities. In many cases the administrative activities that underlie a costly screen are a substitute or necessary complement to an efficient tax. For instance, the EPA may not know how much harmful material a firm emits, or how much damage that material will do, without an independent inspection and some information from the firm. In any event, we make no claims as to the superiority of costly screens; we wish only to illustrate that they can be deployed in more or less efficient fashion, depending on the circumstance. In that sense, our work here is predominantly descriptive and positive, and only weakly normative.

activities). Nonetheless, with limited information regarding costs and benefits, a governmental planner can make educated guesses regarding the efficacy of a costly screen. To demonstrate how this might be accomplished, we must generalize the model of costly screens presented above in two ways.

First, the social benefit or cost of an activity—how it affects social welfare at large—and the private benefit or cost of the same activity—what it is worth to the firm undertaking it—are not necessarily closely tied. In the extended hypothetical from the previous section we held the social cost (c) of an activity constant at 10 and allowed the private benefit (b) to vary. In reality, the activity could be highly socially worthwhile (positive social cost) or extremely harmful to society (negative social cost).

Second, a costly screen need not be set to equal the social cost imposed by an activity—indeed, if the costs of various activities vary across a spectrum (as above), this will not be possible. The costly screen acts only with respect to the private benefit from an activity: it blocks those activities whose private benefit to the firm would be less than the cost of surmounting the screen. In this sense, it is the private value of the activity, not its social value, that determines what effect the screen might have. Consequently, a screen that is greater than the private value of an activity, but lower than its social value ($b < a < c$), could bar socially beneficial activities (as well as socially harmful ones).

As we note above, the benefit of a costly screen lies in the harmful activities that it blocks—the instances in which a firm would undertake a socially harmful activity in the absence of a screen but is now dissuaded from doing so. The social cost of a costly screen stems from two factors: 1) the simple transaction cost imposed by the screen itself; and 2) the socially *beneficial* activities that it blocks. A government must find some mechanism for ensuring that a costly screen will target only (or predominantly) harmful activities, or that it will target far more harmful activities than it does beneficial ones, or that the benefits of eliminating the harmful activities far exceed the cost of applying the screen to beneficial activities. Under certain conditions, and given certain relationships between the private value and social value of various activities, that may be possible.

By way of example, consider the production of two types of goods, Good A and Good B. Imagine that Good A is very valuable to the producing firm (it can sell the good for a large profit), but also sometimes harmful to social welfare—production of Good A occasionally (but not always) results in a great deal of pollution. Accordingly, Good A is frequently (but not always) social welfare enhancing. Good B is *far* less valuable to the producing firm (it can sell the good for at most a modest profit) but always harmful to social welfare—it cannot be produced without creating significant pollution. The production of Good B always diminishes social welfare. Imagine further that Good A and Good B are indistinguishable to a governmental decision-maker; a producing firm will know whether it has produced Good A or Good B, but it would be extremely costly for a government bureaucrat to discover the same, even after the good has already been produced and is on sale. (This may seem a highly contrived set of circumstances, but as we will demonstrate a great proportion of intellectual property has precisely this feature.)

If the government cannot distinguish between Good A and Good B, how could it allow production of Good A while preventing production of Good B? Here, the governmental actor can exploit an asymmetry between the value of these goods to the firm and their value to society at large. Good A is sometimes socially beneficial and sometimes not, but it is always highly valuable to the firm. Good B is always socially harmful and always only slightly valuable to the firm. If the government can at least determine the value of Good B to the firm, the government could establish a costly screen priced at (or slightly above) the value of Good B. The screen will create a separating equilibrium: the firm will continue to produce Good A, but it will cease production of Good B because of the cost of the screen. If, absent a screen, firms would produce a substantial quantity of Good B, then a governmental decision-maker can have some confidence that the screen is welfare-enhancing:[5] the benefits of eliminating Good B are high, and the threat that the costly screen will bar productive activities as well as harmful ones does not exist.

[5] One might wonder why the firms would produce more of Good B than of Good A. The answer is simply that Good A is difficult to produce and cannot be generated with any regularity; again, we will demonstrate that this is a feature common to copyrights and patents.

Consider a second case: suppose that Good B is sometimes socially harmful and sometimes socially beneficial (for instance, if its production occasionally but not always resulted in significant pollution). Under these circumstances, the same conclusion no longer obtains. A costly screen that eliminated the harmful instances of producing Good B would also block the valuable instances of Good B.

Though they are abstract, we believe that these examples describe two major areas of intellectual property law: patent and copyright. The procedures surrounding the granting of those two types of intellectual property rights are best understood as costly screens. We take up this argument in the sections that follow.

II. COSTLY PATENTS

One of us has already written at some length about the manner in which the procedural costs associated with obtaining a patent act as a costly screen. In order to highlight the contrast with the copyright system and frame the analysis that follows, we provide a brief recapitulation of those arguments here.

A. Patent Costs

A patent applicant can expect to spend approximately $22,000 prosecuting a patent to completion and issuance. The vast majority of this sum comes in the form of a deadweight loss: the fees paid to the applicant's patent attorney.[6] Importantly, however, these costs are not fixed across all types and fields of patents, and they vary in two predictable ways. First, patents in more complicated technological fields are more expensive to draft and obtain—a semiconductor patent is pricier than a patent on a new piece of farm machinery. Second, the more "crowded" a technological field—the more patents that currently exist in that field—the more costly a patent is to obtain. The reason stems from the types of fees that applicants are forced to pay to their attorneys. A substantial portion of the total cost of obtaining a patent derives from attorneys' handling of "office actions"—rejections

[6] *See* Jonathan Masur, *Costly Screens and Value Asymmetries*, at 15-20 (unpublished manuscript 2009), *available at* http://www.ssrn.com/abstract_id=1105184.

by the patent office of particular patent claims or requests for more information or redrafting. The more patents that exist in a field, the more likely the patent examiner is to discover some relevant piece of prior art and send the application back to the patentee for further consideration.

These costs create a screen against lower-value patents: if a patentee believes her property right will be worth less than $22,000 (or so), she will likely refrain from filing in the first instance. It is possible, of course, that patentees will not have good information regarding the potential value of their property rights, and that they will file for substantial numbers of patents that are worth less than $22,000 or refrain from filing for substantial numbers of patents that are worth more than $22,000. Yet we believe it unlikely that patentees will be highly uncertain about the putative value of their property rights. The vast majority of patentees in the modern era are major firms doing business in their inventive field.[7] For these types of parties, estimations of commercial value typically precede research and development decisions: the firms will only undertake a line of research if they believe (to some degree of certainty) that it will be commercially viable. Their knowledge of the marketplace—necessary to the existence of the business in the first instance—allows them to gauge the potential worth of their property rights. Nevertheless, we do not mean to overstate the accuracy of these types of determinations. For purposes of the analysis that follows we describe the operation of the costly screen in terms of orders of magnitude: the screen will deter applicants who believe their patents to be worth on the order of $20,000 (i.e., in the tens of thousands of dollars) and will not dissuade applicants who believe they have inventions that are an order of magnitude more valuable (i.e., worth in the hundreds of thousands of dollars or more). Even this crude distinction permits us to draw definitive conclusions about the function and consequences of the PTO's costly screen.

B. Low Barriers and Private/Public Asymmetries

[7] *See* John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 Vand. L. Rev. 2099, 2117 (finding that 85% of all patents are assigned to corporations upon issuance and noting that the average patent lists more than two inventors).

By itself, the fact that patent application processes function as a costly screen says little about what sorts of patents will be screened out and whether the screen is, by any measure, normatively desirable. After all, if the costly screen is not deterring harmful patents, it exists purely as a senseless source of transaction costs. Yet there is good reason to believe that the PTO's screen produces meaningful welfare benefits. Our analysis proceeds in two steps.

First, divide the universe of patents into "low" and "high" value types. These categories are defined precisely by the costly screen: those that will likely be blocked by the PTO's costly screen are low value patents (approximately less than $22,000), and those that will not are high value patents (approximately more than $22,000). It is important to note that we do not mean to constrain the notion of "low" to mean "greater than or equal to zero." Under certain circumstances, a patent can have negative value.

Next, consider the distinction between the private value of a patented invention (what it is worth to the patent holder) and the public or social value of that invention (what it is worth to social welfare at large).[8] Viewed across both value dimensions simultaneously, patents fall into four conceivable categories. First, there are high private value, high social value patents: these are valuable, novel inventions (new drug compounds, innovative computer circuits, etc.) that contribute something tangible to social well-being and might not exist but for the research incentives created by the patent system, and thus represent the paradigm case for the patent system. Second, there are patents with high private value and low *or negative* social value: these are minor or insignificant innovations that contribute little to public knowledge but lead to

[8] Note that here we adjust our nomenclature and describe the social value of a patent (its effect on social welfare) directly, not as a sum of some private benefit and some social cost. We do this for three reasons. First, we are analyzing the social value of the *underlying invention* and the private benefit of the *property right*, which are not precisely the same thing and thus not truly additive. Second, the private benefit from patent rights typically involves only wealth transfers, which have no effect on social welfare. And third, it is easier to understand and evaluate these quantities separately, and there is direct information on them. Again, this move has no theoretical consequences; we highlight it here only for reasons of clarity.

blocking patents and allow their owners to extract significant rents.[9] Third, there are patents of low private value and low *or negative* social value; these are quite common and come in a variety of shapes and forms; we discuss them in greater detail below. And fourth, one could imagine patents of low private value and high social value.

By definition, the PTO's costly screen will select against only patents with low private value. And here the costly screen exploits a significant asymmetry. Patents of low private value and high social value—the fourth category—are almost entirely nonexistent. The broad monopoly rights that patents confer ensure that any invention with high social value will also create significant private value for its inventor. Consequently, the low private value patents that are screened out will necessarily hold only low—or, more importantly, negative—social value as well.

1. High Private Value, High Social Value Patents

The paradigmatic patent is one that is both valuable to the private holder (high private value) *and* covers an invention that is valuable to the public at large (high social value).[10] These types of patents come in many forms—patents on useful new drug compounds, patents on innovative semiconductor devices, etc.—but they will share three common characteristics. First they must be at least plausibly valid,[11] and thus plausibly enforceable as property rights; and second, they must claim inventions (or important components or subparts of inventions[12]) that are commercially viable and useful in a market economy. A patent that satisfies those two conditions is privately valuable—its owner will be able to extract rents either through licensing or through production of the patented good. If the patent is to have social value—if the invention behind it is to be social welfare-

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[9] *See, e.g.*, Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75 (1994).

[10] It is not quite accurate to speak of a "high social value *patent*," because the privately held property right is itself unlikely to be worth anything to the public. Rather, it is the underlying invention that is socially valuable. I will use "high social value patents" here purely as shorthand for that idea.

[11] *See* 35 U.S.C. §§ 101–103 (2007).

[12] For instance, a patent on a braking system for roller coasters is valuable even without a matching patent on the roller coaster itself. *See* United States Patent No. 6,062,350.

enhancing—a third condition must be satisfied: the patent must describe inventions that are genuinely new and thus contribute some socially valuable knowledge that did not previously exist.

The patent system is designed to promote precisely this type of high private value/high social value patent. And while the PTO's costly screen will make these patents slightly more costly to obtain, it will likely block few or none of them. Twenty-two thousand dollars is a meaningful amount of money, but it represents little more than rounding error in comparison to a truly valuable intellectual property right. The $22,000 cost of obtaining a patent is unlikely to discourage researchers who believe that their work will lead to useful, marketable inventions.

2. High Private Value, Low Social Value Patents

The question whether a patent is privately valuable to the holder and the question whether the availability of a patent has spurred socially productive research and innovation are not always coterminous. Patents may be privately valuable because they can be deployed offensively, with the intention of collecting awards for infringement or licensing fees;[13] they may hold value as defensive mechanisms for protecting commercial products from competition or from suit for infringement;[14] and they might be usefully employed as signals to dissuade potential market entrants or attract investors and other third parties.[15] As a class, these patents have high private value: they satisfy the first two conditions listed above—plausible validity and commercial relevance.

At the same time, they offer small or negative social value because they involved little or no socially useful research and

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[13] *See generally* Kimberly A. Moore, *Worthless Patents*, 20 BERKELEY TECH. L. J. 1521, 1522-24 (2005). On licensing, see Oren Bar-Gill & Gideon Parchomovsky, *The Value of Giving Away Secrets*, 89 VA. L. REV. 1857, 1867 (2003).

[14] *See* John H. Barton, *Antitrust Treatment of Oligopolies with Mutually Blocking Patent Portfolios*, 69 ANTITRUST 851 (2002); Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, *in* I INNOVATION POLICY AND THE ECONOMY 119, 121 (Adam B. Jaffe et al. eds., 2001).

[15] *See, e.g.*, Clarissa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 651-53 (2002); Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 144 (2000).

development. These types of patents may slightly enhance social welfare (as in the case of patents that serve as useful signals to investors), or they may diminish social welfare (for instance, patents that involve no novel invention but can be used to extract licensing fees or block market entrance). It is difficult to know whether social welfare is enhanced or diminished in the aggregate by their existence, and that intractable question is well beyond the scope of this paper. What is clear is that like the high private value/high social value patents described above, the PTO's costly screen will not serve as a meaningful barrier to applicants obtaining them. The twenty-two thousand dollar barrier to entry is a small fraction of the value to be realized from a patent of this type.

3. Low Private Value, Low Social Value Patents

Unlike the high private value patents discussed above, there is an entire class of low private value, and low or negative social value patents that the Patent Office's costly screen will select against. These patents come in a variety of forms, but two flavors predominate. The first are those patents that comprise the "patent thicket": those essentially worthless patents that are allowed to lie fallow and are rarely enforced, but that nonetheless drive up search costs and increase litigation risk for firms seeking to do business in the relevant market.[16] These patents have very low value to their owners—they are valuable only to the extent that their owners wish to keep competitors out of the marketplace—and almost certainly diminish social welfare by retarding competition without any meaningful inventive quid pro quo.

The second major flavor of low private value/low social value patents—and one that has been comparatively overlooked—is the class of patents that are useful principally as mechanisms for the filing of nuisance lawsuits. Any patent infringement suit (or threat of suit) involving even a *vaguely plausibly* valid and infringed patent has a

[16] *See* Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, Minn. L. Rev. 132–37 (2007); Ian Ayres & Gideon Parchomovsky, *Tradable Patent Rights: A New Approach to Innovation*, at 6–17 (unpublished manuscript), *available at* http://ssrn.com/abstract=1020276; ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW AND POLICY: CASES AND MATERIALS 615-16 (2007).

nuisance settlement value of approximately $10,000;[17] this is the amount a lawsuit target must pay for an opinion letter informing the potential infringer of the strength of the patent-holder's case and guarding against later claims of willful infringement.[18] Substantial numbers of these actions are initiated by solo inventors or patent holding companies with no commercial ventures beyond the exploitation of its intellectual property portfolio. ("Patent troll" is the less collegial term used to refer to such actors.[19])

The patents that comprise the "thicket" and those that give rise to nuisance lawsuits represent intellectual property protections at their very worst, deterring firms from entering markets or developing new products and consuming litigation resources while contributing essentially zero productive innovation. They are little more than carriers for social welfare-diminishing transaction costs. These are, however, precisely the sorts of patents that will be blocked in substantial numbers by the costly screen imposed by PTO examination procedures. The upfront costs of obtaining a patent force firms and inventors to at least consider whether an application is worth filing before adding another useless patent to the thicket. And when patents cost more to obtain than they can be used to extract in one or two

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[17] These estimates are based upon conversations with attorneys at a number of law firms, principally Kirkland & Ellis LLP and Schiff Harden LLP. Notes on file with author. The cost of such a letter can be much higher—in the range of $30,000—if the technology involved is complex or the asserted patents sufficiently numerous.

[18] The patent statute allows courts to assess treble damage penalties against willful infringers. 35 U.S.C. § 284 (2008) ("[T]he court may increase the damages up to three times the amount found or assessed."); In re Seagate Tech., LLC, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (setting forth the modern standard for determining when infringement has been willful); *see, e.g.*, Delta-X Corp. v. Baker Hughes Prod. Tools, Inc., 984 F.2d 410, 414 (Fed. Cir. 1993) (opinion letter provides near-impenetrable defense to charges of willful infringement); Nickson Indus. v. Rol Mfg. Co., 847 F.2d 795, 800 (Fed. Cir. 1988) (same). An accused infringer has no affirmative duty to seek an opinion letter if it wishes to avoid liability for willful infringement, *Seagate Technology*, 497 F.3d at 1371, but the chances of a finding of willful infringement increase dramatically when an infringer has not obtained an opinion letter, and so nearly any colorable accusation will trigger a request for the opinion of counsel.

[19] *See* http://en.wikipedia.org/wiki/Patent_troll.

nuisance settlements, they become substantially less attractive as a business tool and less open to exploitation.[20]

Moreover, the costly screen is even costlier, and thus more effective, against these types of patents. Some patents will hold small private value because they are commercially insignificant—the patent on a method for swinging on a swing, for instance[21]—but these patents are typically irrelevant from a social welfare perspective as well. Many of the more insidious patents described here hold only low private value because they are not plausibly valid. These are the patents that will encounter the greatest number of hurdles during PTO examination, and thus the patents for which the costs of examination will be highest.[22]

Of course, the Patent Office's costly screen will hardly bar all of these low private value, low social value patents; tens of thousands of such applications are filed yearly (and many of them granted eventually).[23] Yet without a costly screen—if, for instance, the PTO were to move to a registration system[24]—the problem would likely be far worse. By selecting against this class of patents, the process costs perform a beneficial function, one that may eliminate greater numbers

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[20] *See* Robert G. Bone, *Modeling Frivolous Suits*, 145 U. PENN. L. REV. 519 (1997) (analyzing the nuisance lawsuit as a business tactic). This is not to say that nuisance lawsuits will never be profitable, or that firms will never pursue questionable patents with the intent only to extract such settlements. A firm may be able to garner more than one quick payout with each patent, though at the same time it will not necessarily be capable of coercing targets—especially repeat players—into paying even inexpensive blackmail. Because of the costs of obtaining a patent, a firm cannot count on being able to turn a profit, or even recoup its investment, by threatening some number of small, meritless suits; it must actually believe that it has an invention worth commercializing or a valid patent in a commercially useful field before a patent application becomes worth the cost of prosecution.

[21] *See* ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS 32 (2004) (describing a variety of commercially irrelevant inventions that have nonetheless led to patents).

[22] *See* Part II.B, *supra*.

[23] *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. L. REV. 1495, 1528 (2001) (providing statistics on overwhelming numbers of patents granted).

[24] *E.g.* Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent Privilege in Historical Context*, 92 CORNELL L. REV. 953 (2007); F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55 (2003).

of these harmful patents than the substantive examination that the process costs are themselves used to purchase.

4. Low Private Value, High Social Value Patents

The benefits provided by the PTO's costly screen would be quickly counter-balanced if the screen similarly selected against low private value, high social value patents—patents that were worth little to their owners but contributed socially productive research and innovation. But patents are not symmetrically distributed across these categories: low private value, high social value patents essentially do not exist. With very few exceptions, any truly novel, commercially relevant invention—i.e., any socially productive invention—will give rise to a privately valuable patent on that invention. The patent system is designed to accomplish precisely this end: patents allow inventors to capture a substantial portion of the wealth created by their inventions.

There will, of course, be rare exceptions to this rule—the transformative idea that does not directly give rise to an "invention,"[25] or the peculiar patent that creates wealth that cannot be captured commercially. But these patents will be the rare outliers. Unlike the other three categories of private/public value relationships, there is no true *class* of high social/low private patents. The asymmetry may not be absolute, but it is undoubtedly pronounced.

Table 1 summarizes this set of relationships between private and social value for various types of patents. Only patents of low private value and low or negative social value—precisely those patents most likely to diminish social welfare—will be meaningfully affected by the cost of PTO procedures.

Table 1: Social and Private Values of Various Patent Classes

	High social value	Low or negative social value

[25] *See* 35 U.S.C. § 101 (2008) ("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter . . . .").

High private value	Commercial products; improvements; major components	Blocking patents; valid patents involving little novel research
Low private value	*essentially none*	Nuisance patents; minor inventions

It remains impossible to know whether the process costs involved with patent examination are justified in the aggregate. After all, every applicant—including those with valid patents and useful inventions—is forced to expend significant resources to obtain a patent. Nonetheless, there is good reason to believe that the costly screen imposed by the PTO's process costs, coupled with the substantive examination purchased by those costs, serves as a better filter against social-welfare-diminishing patents than the PTO's flawed examination would alone.

III. COSTLY COPYRIGHTS

In contrast to patents, law allows copyrights to arise with surprising ease. Patent applicants must undergo an elaborate and costly examination procedure before their exclusive rights vest. Copyrights, however, arise without any compliance with formalities. An author owns a copyright in a work of authorship as soon as the work is fixed in a tangible medium of expression—whether or not the author wants it. The striking ease with which copyrights arise explains the emergence of a critical scholarship arguing that the proliferation of copyrights is socially harmful, and suggesting the imposition of costlier formalities prior to their vesting.

In this section, we argue that just as costly screen theory helps to explain the logic of patent's costly examination system, so can it help to explain why copyright lacks any such hurdles to the creation of authors' exclusive rights. The reason is that the value asymmetries that characterize patent are reversed in the copyright setting. In patent, there are almost no works that generate little private value for their inventor, but still produce significant public benefits for society. In copyright, by contrast, numerous works generate little private value

for their author but may still have important benefits for the public at large.

This asymmetry explains why low screens are necessary in copyright, just as they would be counterproductive in patent. In theory, the elaborate patent examination process may screen out low private value, high social value patents, but in practice this concern does not detain us because there are no (or vanishingly few) such devices. But in copyright, the presence of these low private value, high social value works means that costly screens are undesirable, because they would eliminate some nontrivial number of works that generate social value far in excess of what their creator can extract. Because the copyright system must set low screens to ensure the creation of this category of works, though, it must also tolerate the proliferation of works that have low private value for authors as well as low (or negative) social value for the public. Copyright's screenlessness still creates a net increase in social welfare, though, because this latter category of works generates little negative social impact.

B. The Costs of Copyright

1. The Current system

Some intellectual property rights are costly to acquire. As we explain above, individuals who seek patents must undergo a costly—if not particularly rigorous—examination process. While most patent applications are granted, patentees must pay application fees, professional services associated with patent prosecution, and other expenses that typically total an average of $22,000.

Copyrights present a different story. Under current law, authors need jump through no regulatory hoops in order for exclusive rights in a work of authorship to vest. Copyright comes into being as soon as an original work is fixed in a tangible medium of expression[26]—whether the author wants it or not. The result is that we create copyrights constantly and inadvertently. The emails you write to friends, the doodles you draw on the back of cocktail napkins, the

[26] 17 U.S.C. § 102(a) ("Copyright protection subsists … in original works of authorship fixed in any tangible medium of expression[.]").

photos you take at family gatherings—each of these have the same federal protection as multi-million dollar films or bestselling novels.[27]

While federal law requires no more than fixation in a tangible medium of expression for copyright to vest, it has not sidelined formalities completely. Registration remains available through the U.S. Copyright Office, and requires only submission of a simple form, deposit of a copy of the work, and a filing fee of $35 to $65.[28] Registration is not necessary for authors' exclusive rights to vest, but does bring numerous substantive advantages. Most importantly, registration is a jurisdictional requirement for bringing an infringement action,[29] so it is effectively a prerequisite for judicial enforcement of authors' exclusive rights. Moreover, in order to preserve the possibility of recovering statutory damages or attorney's fees in a future infringement suit, owners must register their work prior to infringement or within three months of publication.[30]

These formalities do not screen out possible owners in the same way that the patent examination system screens out possible patentees. Copyrights arise immediately upon fixation in a tangible medium of expression, independently of registration. Because registration becomes relevant only at the early horizon of litigation, not prior to copyright's vesting, it cannot separate owners from nonowners. One might argue that registration does separate those who are willing to litigate from those who are not, but this, too, is implausible. By the time the decision to pursue judicial action becomes relevant, an owner will typically have much more

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[27] It was not always so. From the inception of the republic until 1909, federal copyright vested only on successful registration. And from 1909 until 1976, federal copyright vested on general publication with proper notice.

[28] The Register of Copyrights recently announced changes to fee structure for copyright registration. Registrants who use the eCO form to register online will pay only $35; registrants who use the fill-in CO form will pay $50; and registrants who file a traditional paper application will pay $65. Due to begin August 1, 2009, he new scheme is designed to encourage online filing (currently about 50% of copyright applications are submitted online). *See* "U.S. Copyright Office to Adjust Fees", *Library of Congress News Releases*, June 3, 2009, http://www.loc.gov/today/pr/2009/09-111.html.

[29] 17 U.S.C. § 411.

[30] *Id.* § 412. Also, registration made before or within five years of publication will establish prima facie validity in court of the validity of the copyright and the facts stated in the certificate.

information about the value of their copyright, and their decision to litigate will be driven by cost considerations several orders of magnitude larger than the fee associated with registration. In other words, a $50 filing fee cannot have any meaningful impact on the decision to undertake enforcement actions.

2. Possible alternatives

So while getting a patent requires would-be owners to navigate some fairly onerous screens, copyrights arise constantly, screenlessly, and even involuntarily. This point creates a distinctive challenge for analyzing the copyright system in terms of costly screen theory. With patents, the analytical approach is straightforward: evaluate the costs of patent examination, and use that as the benchmark that owners use when evaluating whether it's worth their while to seek a patent at all.

Developing a costly-screens theory for the low threshold of copyrightability, by contrast, requires a counterfactual: we must imagine various plausible screens, and then examine whether those screens would exact excessive social costs. There are a variety of possible alternatives. We could imagine a world in which getting a copyright was as difficult as getting a patent: authors would have to submit their work to an expensive and onerous registration process, and exclusive rights would not vest until after the Copyright Office approved authors' applications. This possible alternative would make acquiring a copyright much more costly—about $22,000, or roughly the cost of acquiring a patent.

A more modest alternative would be to make vesting contingent on registration, but to make that registration process look more like the federal trademark system. Trademark registration is costlier than copyright registration. While we call this process trademark "registration," it is really closer to a patent-style examination because it involves substantive review of the validity of a trademark, not just a determination that applications comport with applicable formalities.[31] The base fee for registration of a mark with the PTO is $325, and advisable ancillary services impose additional

[31] *See* Graeme B. Dinwoodie & Mark D. Janis, TRADEMARKS AND UNFAIR COMPETITION: LAW AND POLICY 313 (2004) (observing that trademark registration is really closer in substance to patent examination).

costs. Cut-rate providers promise successful registration (reflecting primarily the search costs of determining whether there are any preexisting similar marks) for about $900, with law firms presumably charging much more. A low-end estimate of the average cost of trademark registration thus lies at about $1000 per mark, so we can assume that a copyright registration system modeled on these assumptions would cost authors about the same amount to secure their rights.

A final approach would be to maintain the current copyright registration system, but to make registration a prerequisite for an author's exclusive rights to vest. This approach would erect the least costly screens. Registration fees range from $35 (for online registration) to $65, and an application that comports with applicable formalities and includes a deposit copy of the work is nearly certain to be registered. Even when accounting for the transaction costs of submitting such an application, the average price of registration would be no higher than $50.

With patents, it is possible to cull data from current practices to estimate the cost of going through the examination system, and then to use that benchmark as the threshold dividing high private value patents from low private value patents. Copyright's present screenlessness does not permit this kind of easy dichotomy. Instead, we use these few different notions of what a copyright examination might look like as rough benchmarks to frame the following discussion of high versus low private value copyrights.

C. The Social Costs of Copyright Screens

1. Private value, social value

As with patents, we can imagine two axes along which copyrights in works of authorship can be arrayed: the *private value* they generate for their author, and the *social value* they generate for the public. Private value refers to the value that a copyright owner can expect to internalize from her work. An author's royalties for book or album sales, or a studio's revenues from ticket sales and licensing resulting from a major motion picture, are two familiar examples of private value resulting from copyrighted works of authorship. Some

forms of private value, though, may not cash out so neatly in dollars. An author may produce a protected work—such as a Wikipedia entry or a post on a personal blog—not in the expectation of royalties, but because he seeks to create reputational capital among a community of readers, or simply because he derives intrinsic psychic value from the experience of creative writing.

Social value refers to the public benefits a work produces. This form of value is harder to quantify in terms of dollars, but examples are familiar. Works of authorship create aesthetic value, as where a landscape painting causes viewers to experience the beauty of the scene portrayed by the artist. They may also create informational value, as where a cookbook educates users and enables them to make new dishes by following specific instructions. A creative work may also enrich viewers more generally, as where a groundbreaking fictional novel causes readers to think about the world around them, or the craft of writing, in a new way.

Public value can be further subdivided into two categories: *core value* and *spillover value*. Core value refers to the value generated by a work of authorship that is recouped by its owner (for example, by charging for sales of books or movie tickets). We can think of core public value as simply the flip side of private value. This is the well-known dynamic that makes copyright the "engine of creative expression."[32] By creating exclusive rights in works of authorship, law enables authors to extract value from other's enjoyment of those works, and this provides a pecuniary incentive for authors to create those works in the first place.[33]

This well-known account of copyright's social benefits does not tell the whole story. In addition to core value, works of authorship create spillover value: benefits that a work generates that cannot be

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[32] Harper & Row Publishers v. Nation Enters., 471 U.S. 539, 558 (1985).

[33] This does not mean that copyright is necessary for the production of any creative works. Some authors may create because they are driven by some other force—desire for literary fame, or simply artistic inspiration—that is unrelated to profit. Moreover, some works—such as computer programs—may be difficult enough to copy that authors can reap sufficient rewards in the gap between first creation and first copy to provide a sufficient incentive to create. *See, e.g.*, Michele Boldrin & David K. Levine, *Perfectly Competitive Innovation*, Federal Reserve Bank of Minneapolis, Research Department Report 303 (March 2002).

recouped by the author.[34] Spillovers are a familiar phenomenon in the world of physical property. If I keep my house up and tend a beautiful rose garden in the front yard, I create real value for my neighbors (by increasing the appeal of the surrounding neighborhood and helping to marginally increase local housing values), and for passersby (by providing them with the aesthetically gratifying experience of looking at my flowers).[35] Yet that spillover value is not something I can expect to internalize,[36] for both legal and practical reasons. We can think of the public value generated by copyrights as the sum of their core and spillover value.

One can tell much the same spillover story with respect to works of authorship. Consider, for example, Oliver Wendell Holmes' *The Path of the Law*. However much pecuniary value Holmes may have recouped in terms of royalties for book sales, this amount vastly understates the social benefits generated by the work, which introduced foundational concepts that continue to influence the law's development today. An argument that Holmes (or his estate) should be entitled to some royalty every time *The Path of the Law* is cited—or when one of its central ideas is invoked—fails for both legal and prudential reasons. It fails as a matter of law because copyright promises authors relatively thin protections, so that reasonable references to a leading work are excused under the fair use doctrine, while ideas generated by such a work can be freely used by all because ideas (as opposed to specific expressions of ideas) remain unprotected by the Copyright Act. And even if the latter were not the case, a Holmesian attempt to extract value from every invocation of *The Path of the Law* would fail because it is simply impracticable. The impact of his work is so broad and diffuse that it would be virtually

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[34] *See* Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257 (2007) (describing and explaining the social benefits of spillovers).

[35] As the example suggests, spillovers can work in the opposite direction. If I buy a house and allow it to fall into disrepair, I exact costs on passersby who have to look at an eyesore, as well as on the local micro housing market, which will have depressed values because of the diminished surroundings. These costs cannot, however, be recovered by my neighbors, and for this reason, I will not internalize them.

[36] As this phrasing suggests, the idea of spillovers is not novel. Economists have been discussing this idea of non-internalized costs or benefits for years, and calling them externalities.

impossible to identify and charge royalties for every instance of its influence.

2. A typology

When speaking of the value of copyrights, then, it is important to first distinguish between private and social value; and then to distinguish between core and spillover social value. And as with patent, we may go a step further and distinguish between high and low private value works by looking at how the hurdles (or screens) that stand in the way of acquiring exclusive rights interact with an author's decision to create. A work has low private value if the value that an owner expects to internalize from the work is lower than the cost of a given screen; contrariwise, it has high private value if the value that an owner expects to internalize from the work is higher than the cost of a given screen. Whether a work has high or low social value operates on more of a sliding scale; where a copyright generates widespread benefits other than to its author, we can say that it has high social value.

Combining the social/private value axes generates the same two-by-two grid we described in the patent context:

1: High private/High social	2: Low social/High private
3: High social/Low private	4: Low private/Low social

We consider the implications of different copyright screening systems on these four categories of works.

a. High private value/high social value works

The standard copyright story is "author creates, public consumes, author earns royalties". We have described above how the reality of copyright's value equation is more complicated than this, but sometimes the copyright story does indeed play out in just this standard way. This is true with respect to the first category of copyrights, those that create high value for their authors as well as high value for society at large. These copyrights have three distinguishing features. First, they create social value—that is, they enrich, inform, enlighten, or entertain the public in some meaningful

way. And in order for the copyright to have social value as well, it must have two additional features. It must be copyrightable; that is, enforceable as a property right. If the work does not meet the Copyright Act's essential requirements for copyrightable subject matter (e.g., originality, fixation), owners do not have an exclusive right from which they can seek to extract value. Finally, the value generated by the copyright must exceed the costs the author must bear in order to create the exclusive right in the first instance.

This is the paradigmatic kind of work the copyright system is designed to encourage, and examples of such works abound. The *Star Wars* films of George Lucas made their producer a very rich man through royalties and licensing deals, but they also enriched the public as well, creating both core value (enjoyment derived from seeing the films or playing with related action figures, which Lucas was able to internalize[37]) and spillovers (enrichment of popular culture through the introduction of certain classic tropes and phrases,[38] which Lucas was not able to internalize). For this category of works, increasing the costs of acquiring copyrights would be largely irrelevant, since they would be dwarfed by the amount of profit that authors would expect to extract from their works.

b. High private value/low social value works

In the second category of works are those that create significant value for their owner, but have low (or negative) value for the public. We have shown that there are numerous such works in the patent context, such as blocking patents that allow owners to extract

[37] We have defined core public value as the flip side of a copyright's private value—that is, the value of the copyright that the owner successfully internalizes. This does not mean, of course, that there is a perfect correlation between all of the value generated by a work of authorship to the public and the value internalized by the owner. Many viewers of *Star Wars* probably derived much more enjoyment from seeing the film than the mere cost of the movie ticket, and that excess value was not internalized by Lucas and would be rightly regarded as a spillover. The reverse could be true, of course. Viewers who make the unfortunate decision to pay $10 in order to see a film that turns out to be terrible suffer a welfare loss that they cannot recoup (two words: *The Reader*).

[38] Jon Stewart's skewering of Dick Cheney derived its effectiveness to a large extent from its use of Darth Vader themes. And Star Wars phrases pervade common parlance. E.g., "May the force be with you"; "These aren't the droids you're looking for"; "Many Bothams died to bring you this information."

substantial value through holdups while creating no (or negative) benefits for society more generally. By contrast, there are no—or at least relatively few—works that fall into this category in the copyright setting. Works that allow their owner to extract meaningful value almost invariably generate meaningful value for society as well.

The reason for this lies in the differential scope of the property rights created by the Patent and Copyright Acts. While patent rights are broad, the entitlements enjoyed by copyright owners are much weaker. Owners' rights consist not of a general right to exclude or use, but only of six enumerated statutory exclusive rights.[39] The scope of copyrights is further narrowed at the outset by the idea/expression dichotomy and at the back end by various statutory defenses. The result is that it is very difficult for copyrights to perform the same blocking function as patents, because they are much easier to engineer around. A purported infringer can appropriate elements of the owner's work, but argue that her use partakes only of the general idea embodied by a copyrighted work of authorship, not its expression; or that her use does not run afoul of any of the statutorily enumerated owner's rights; or that her use amounts to infringement, but is excused pursuant to the fair use defense.[40] While one can imagine the existence of a copyright thicket, these statutory limits preclude one from developing.

It is, of course, possible to point to numerous instances where an owner has leveraged a copyright in a way that precluded another actor from engaging in creative activity. After all, this is what possession of a copyright means: the legally enforceable right to preclude others from free riding off the fruits of your creative labor. But few of these instances involve an owner leveraging a *low* social value copyright to do so. Owners of classic musical works and sound recordings often defend vigilantly any attempts to sample their works without a license, and have largely found courts sympathetic to their

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[39] *See* Jessica Litman, *War Stories*, 20 CARDOZO ARTS & ENT'MT L.J. 337, 338 (2001) ("The copyright statute doesn't give copyright owners the exclusive right to *use their works* for limited times, or the exclusive right to *exploit their works commercially* for limited times. Instead, it gives copyright owners the exclusive rights to reproduce, adapt, distribute to the public and publicly perform or display their works, subject to a host of statutory exceptions.").

[40] Or by various other statutory defenses, such as the first sale doctrine. 17 U.S.C. § 109(c).

claims.[41] Yet these attempts to extract value from the original work do not involve low social value copyrights at all.[42] If anything, just the contrary is typically the case. The fact that a musician has chosen to sample another's work proves that the sample has some value. That is, a sample can be effective only to the extent that it is familiar and well-known, which means that sampled works have almost invariably achieved both commercial success and broad popularity—the very definition of a high social value work.[43]

Some types of copyrights used by their owner in an offensive[44] manner may appear, at first blush, to fall into the high private value, low social value category. Owners of literary estates have enforced copyrights in order to keep famous authors' personal letters private.[45] While the motivation behind these suits is to preclude exposure of embarrassing information rather than to extract a licensing fee, the copyrighted letters in these disputes can hardly be said to have low social value. On the contrary, the fact that critics seek to incorporate sections of these famous authors' personal writings in their scholarship illustrates that the letters contain information that would be informative and interesting to the public. In a similar move, Scientologists have brought copyright suits against former members to

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[41] *E.g.*, Bridgeport Music v. Dimension Films, 383 F.3d 390, 398 (6th Cir. 2004) ("Get a license or do not sample.").

[42] Some writers have compared the music catalog owners' demands for licenses to that of patent trolls, *see* Tim Wu, *Jay-Z Versus the Sample Troll: The Shady One-Man Corporation That's Destroying Hip-Hop*, Slate.com, Nov. 16, 2006, *available at* http://www.slate.com/id/2153961/, but this comparison is inapt. Companies like Bridgeport Music that acquire catalogues of copyrights do so for the same reason any music publisher acquires musical works: to negotiate licenses for works in the owner's catalog, and to protect against unauthorized use of those works. Such companies often create value by clearing rights to bodies of work that have become disorganized and conflicted. *See Bridgeport Music*, 383 F.3d at 394 (discussing Bridgeport's work with respect to George Clinton's catalogue); David Fagundes, *Crystals in the Public Domain*, 50 B.C. L. REV. 139, 168 n.165 (2009) (discussing the social value of centralizing rights in musical works).

[43] This does not mean that the strict "license all samples" rule is optimal. It may well be the case that society is better served by allowing free use of samples to facilitate second-generation creation. Our point here, though, is merely a descriptive claim that the copyright in the sampled work belongs in the high social value category, not the low social value category.

[44] N.B., we mean "offensive" as in "on offense" not as in "I am offended".

[45] Wright v. Warner Books, Inc., 953 F.2d 731 (1991); Salinger v. Random House, 811 F.2d 90 (2d Cir. 1987).

prevent the public release of internal documents relating to the governance of their religion.[46] Here, too, though, the fact that the plaintiffs are so eager to suppress release of the work reveals its high social value; Scientologists aggressively enforce their copyrights in such settings precisely because society stands to learn much from the material that former members have attempted to make public.[47]

Whether the issue is the owner of a musical work catalog seeking a license for a sample, or efforts by owners to keep protected material private, the copyrights at issue still generate high social value. Indeed, the fact that someone wants to sample a work, or to expose it to the public eye, means that the work has the capacity to entertain or enlighten the public. Ultimately, though, whether this category has any members is unrelated to our costly screen thesis. Even if the barriers to acquiring copyright were raised, that would only screen out works that create low private value. Authors will continue to create works expected to generate private value in excess of the costs of any screens, regardless of whether those works generate high or low public value.

c. Low private value/low social value works

In sharp contrast to paradigmatic copyrighted works—ones that earn revenue for their creators and bring value to the public—lie works that produce no significant value for either their authors or society. These are low private value, low social value works. And thanks to the lack of screens prior to copyright vesting, these works proliferate. We have all probably created numerous low private value, low social value copyrights in the past week. An email written to a friend, a home movie of a family gathering, or a doodle drawn on the back of a cocktail napkin each merit the same copyright protection as blockbuster Hollywood movies or bestselling mystery novels, despite the fact that their value to their authors or the public are negligible.

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[46] *See* Religious Technology Ctr. v. Netcom On-Line Comm'n Servs., Inc., 907 F.Supp. 1361 (N.D.Cal. 1995).

[47] Again, it may be suboptimal for owners to pursue such litigation, because we may all be better off in a world where we can learn more about famous authors' personal lives or the inner workings of Scientology, even if these parties suffer embarrassment as a result. But even if it were true that copyright litigation brought solely to suppress the release of works is exacts a net cost on society, this does not mean that the protected work possesses low social value.

Our thesis is that the costless nature of copyright vesting has unforeseen social benefits, but the profusion of low private value, low social value copyrights may initially seem to undermine this point. In the patent setting, part of the benefit of the examination process is that it screens out this very category of inventions—those that frequently create negative social value. Here, one might argue that the existence of low private value, low social value works exposes a problem with copyright's costless screens. As we have shown above, screenlessness generates social welfare by assuring the creation of works with low private value but high social value; but what if that welfare is overborne by the social costs of permitting the creation of countless low private value, low social value copyrights?

This is, ultimately, an empirical question with an empirical answer that is beyond the scope of this paper. There are, however, good reasons to think that these low private value, low social value works will not create nearly the social costs in the copyright setting as they do in the patent setting. For several reasons, the primary concern motivating the patent screen—the patent thicket and the search costs it creates—does not obtain, or at least does not obtain to nearly the same degree, with respect to copyrights.

The first reason is that the overwhelming majority of copyrighted works in this category are innocuous. The countless interpersonal emails, family home videos, or absentminded doodles that we create may enjoy exclusive rights as a formal legal matter, but they are almost never the subject of litigation.[48] Indeed, the substantial majority of authors in these works do not know that they are protected by copyright law, and would not care if they did know.

The second reason is that independent creation is a full defense in copyright, while it is not in patent. Inventors can be held liable for

[48] There are examples, albeit few, of informally created copyrighted works that resulted in major litigation. Abraham Zapruder's amateur video of the Kennedy assassination is the best example. Time, Inc. v. Bernard Geis Assocs., 293 F. Supp. 130 (S.D.N.Y. 1968). The possibility that a random work may become valuable tells us nothing about entry costs, though; Zapruder's decision to film the procession at Dealey Plaza had nothing to do with the barriers to copyrightability since he had no reason to think about extracting value from the film until well after the initial decision to create it.

infringement whenever their device overlaps with a preexisting patent, even if they believed in good faith that it did not. This raises the search costs associated with patent significantly, since an inventor has to be completely confident that his device is similar to no prior art. By contrast, copyright requires only that works be original with respect to their authors, not that they be novel with respect to all previous works, so that a work that originated in its creator's own mind cannot infringe a preexisting work—even if the two otherwise possess substantial similarity.[49] There are, in other words, very few search costs from a "copyright thicket" as there frequently are in patent.

The third and final reason is that copyrighted works of authorship are much easier to engineer around than patented devices. Patentees enjoy relatively broad property rights in their devices, so that second comers cannot practice the invention in almost any way without incurring the risk of an infringement suit. Copyright, by contrast, is shot through with limitations on owners' rights that make it much easier for later creators to engineer around prior works. The idea/expression dichotomy and the narrowly enumerated exclusive rights of section 106 each limit the scope of owners' property rights in the first instance, and a host of statutory defenses such as fair use or first sale privilege certain uses of protected works even despite owners' objections. As a result, there is a much lower chance that nuisance lawsuits from low social value copyrights will inhibit market entrance.

One category of work that has deterred significant creation may seem to fall into the low private value, low social value quadrant: orphan works. These are works whose ownership has become unclear, so that later creators are forced either to use the work, raising the possibility that the owner will emerge later and demand exorbitant damages or a crippling injunction, or forego using it in light of these litigation fears. One of the most familiar examples of orphan works is old newsreel footage. The owners of the rights in decades-old

[49] Walker v. Viacom Int'l, Inc., 2008 WL 2050964 (N.D. Cal.) (entering summary judgment in favor of creator of SpongeBob Squarepants because, inter alia, SpongeBob was created independently of, though subsequently to, plaintiff's anthropomorphic sponge); *but cf.* Bright Tunes Music Corp. v. Harrisongs Music, Ltd., 420 F. Supp. 177, 177-78 (S.D.N.Y. 1976) (holding that subconscious copying is still actionable), *aff'd sub nom*. ABKCO Music Inc. v. Harrisongs Music, Ltd., 722 F.2d 988 (2d Cir. 1983).

newsreels are often unclear from the newsreels themselves, so that documentary filmmakers interested in using the newsreels must either engage in a costly search to clear rights to the work, or must use the footage despite the risk of costly litigation—even though the newsreel almost certainly no longer generates much value for its owner. Few of these works actually earn value for their owners, but this does not mean they could not be made the subject of nuisance suits. As a result, one might say that they fall into the low private value, low social value category, and thus raise the likelihood that screening in these works exacts inordinate social costs.

The orphan works problem, and the specter of related nuisance litigation, is clearly a serious concern, and has rightly spawned pending legislation designed to allay the concerns of future creators in order to encourage the use of these works.[50] Nevertheless, it is inapposite to broadly categorize orphan works as low private value, low social value copyrights. While any copyright may decline enough in value by the end of its term that it falls into this quadrant, our thesis is about the incentives of authors at the moment of creation, rendering later shifts in value irrelevant. The paradigmatic examples of orphan works indicate that most of these works begin with high rather than low private and social value. Newsreels, for example, likely generated value for their creators, who licensed them to be shown before feature films; and for society, who relied on them for news and entertainment. While orphan works comprise a heterogeneous category for which a universal initial value—private or social—cannot be ascertained, at the very least we can say that the current status of orphan works as generating low social and private value does not necessarily indicate that they were low social value, low private value works at their inception.

d. Low private value/high social value works

This category of works consists of copyrights that create significant value for the public, but allow their owners to extract relatively little private value. This category is thus just the opposite of the high private value, low social value copyrights discussed

[50] *E.g.*, Shawn Bentley Orphan Works Act of 2008, S.2913 (Sept. 27, 2008); *see also generally* U.S. COPYRIGHT OFFICE, REPORT ON ORPHAN WORKS 22 (2006), *available at* http:// www.copyright.gov/orphan/orphan-report.pdf.

immediately above, and it operates precisely the inverse way in the copyright setting as it does in patent. That is, while there are no or almost no patents that generate low private value while also producing high social value, the relatively weaker property rights granted to copyright owners means that copyrights in this category abound. Copyrights generate core social value through predictable revenue streams that usually enable owners to extract value (book royalties, sales of movie tickets and licensed merchandise), but they also create considerable spillover social value (useful ideas, enriching literary themes) in ways that do not create correlative profits for their owners.
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Examples can be roughly grouped into at least two categories. Some works may create social value because they introduce ideas or themes that are enormously influential, but produce little or no value for their author because—despite their author's best intentions—they fail to achieve commercial success. Consider, for instance, the countless movies that flop at the box office but are critical successes that influence countless later filmmakers, or become cult classics bringing joy to a wider audience.[51] Much the same is true of literary works that may introduce groundbreaking themes that influence generations to come, but earn little pecuniary reward for its author due to weak commercial appeal, or just bad luck and fickle public tastes.[52] Other high social value works may generate low private value despite commercial success, but because they are thinly copyrighted, preventing their author from extracting value from them that is commensurate to what they generate for society. Telephone directories and other information databases are enormously publicly useful insofar as they aggregate and make available important data,

[51] The movie "Swingers" furnishes one such example. This 1996 film created a cult following, launched the careers of several now-major actors like Vince Vaughn, and enriched (some might say infected) the common parlance with countless catch-phrases (e.g., "Vegas, baby, Vegas" and "You're so money and you don't even know it"), but was (by Hollywood standards) a major box-office loser, earning well less than its production budget. Quentin Tarantino's "Reservoir Dogs" failed at the box office as well, despite widespread critical acclaim and enormous subsequent influence. The short-lived Trio Network even created a series called "Brilliant but Cancelled" that featured TV shows that were widely loved but that somehow failed anyway.

[52] *Moby Dick* is the paradigmatic example. Widely considered one of the greatest American novels, it was both a critical and commercial failure following its 1851 publication, and only began to earn respect when Melville and his work were rediscovered in the early 1920s.

but the Copyright Act's explicit prohibition on exclusive rights protection for facts significantly hampers authors' ability to internalize value from even the most socially valuable compilations.[53]

The prevalence of low private value, high social value works suggests that screens in copyright will be counterproductive. The costlier the screen, the more likely it is that authors will decline to create works whose low private value they deem too low. In the patent setting, the dearth of low private value, high social value works reduces concern about the costs of screens. If there are no patents in this category, then creating entry barriers that reduce their production can have no social costs. In copyright, though, erecting costly screens raises serious concerns about precluding the creation of works that are enriching for society even though they generate little value for their authors. Since copyright owners internalize much less value from their creations than patent owners do, each increase in the difficulty of acquiring a copyright comes with the correlative social cost of deterring the production of a work that may possess substantial social utility.

The greater uncertainty of predicting the future value of works of authorship complicates the already problematic nature of costly screens in the copyright setting. Costly screen theory suggests that actors considering whether to create IP must compare the costs of creating the exclusive right to the expected value they will be able to internalize from the copyright or patent. In the patent setting, predictions of future value are more plausible and more stable. First, most patents are produced by firms, not individuals, and firms have more expertise in the relevant marketplace and greater resources with which to do market research to determine an invention's likely future profit. Second, and related, patents tend to fill relatively determinate and concrete social needs, such as a disease that needs curing or a mechanical device that needs a more efficient alternative. If your patented device meets such a need, you can have relatively high confidence that it will be remunerative.

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[53] It does not, of course, eliminate completely their ability to internalize value. Creators of databases can and do turn to contracts to limit users' ability to copy the database. Wholesale copying of databases may also run afoul of the limited protection authors may have in the selection or arrangement of facts in compilations. Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 358 (1991).

Copyright differs in each of these respects. Compared to patents, many more copyrighted works are created by individuals rather than firms, and as a result, authors have relatively less ability to do the kind of research that will allow them to make determinate predictions about the future value of their work. Independently, the likelihood of any work of authorship earning substantial profits is highly uncertain, no matter how much market research an author can do. Creative work does not fit the same kind of specific, clearly defined need that patented devices do. Rather, the commercial success of works of authorship is determined largely by the always changing preferences of a notoriously fickle public. For each of these reasons, copyright owners have a much weaker ability to predict the future value of their works, and this uncertainty provides an additional reason that costly screens are likely to deter socially valuable copyrights.

C. The Costs of Costly Screens in Copyright

A large judge of the Seventh Circuit once asked a question about IP in typically thundering rhetorical style: "Why would we want to compensate the inventors of products that flop in the market? Why compensate losers?"[54] What this inquiry profoundly misses about the nature of intellectual property is that its design is not only to generate private value for its creators, but value for society as well. Of course, not all works will generate equivalent private and social value, and as we have seen, some works will produce high value on one score but low value on another. As a result, the value generated by patents and copyrights can be represented in a two-by-two matrix that recapitulates the categories described above:

	High Social Value	Low Social Value
High Private Value	1: Highly lucrative and popular works such as Star Wars or Harry Potter	2: Essentially none
Low Private Value	3: Thinly copyrighted works like compilations or directories; influential but commercially unsuccessful books or films	4: Insignificant works such as doodles on cocktail napkins, emails to friends, or home videos

[54] Frank Easterbrook, *Cyberspace Versus Property Law?* 4 TEX. REV. L. & POL'Y 103, 106 (1999).

This matrix also helps to show whether costly screens are socially beneficial. Because actors internalize the costs of creating intellectual property, any barriers to this creation will have the effect of cutting off the production of intellectual property that the creator thinks will not generate enough revenue to overcome the cost of the screen (independently of whether the work generates social value). Screens will thus preclude the production of some percentage of the low private value works in the third and fourth quadrants of the above matrix.

In the patent context, there exists a good argument for costly screens. Screens preclude only the production of inventions that create no or negative social value; inventions that create high social value but generate little value for their owners exist in negligible numbers at best. The elimination of patents in the former latter category is clearly socially beneficial while the "elimination" of patents in the latter category generates negligible social costs because there are no or few patents in that quadrant.

But copyright is a different story. The effect of costly screens in the copyright setting would likely be suboptimal, because the weaker entitlements enjoyed by copyright owners mean that there are numerous third-quadrant works—i.e., works that create low private value but nevertheless generate substantial social value. Particularly in light of authorial difficulty in predicting the future value of a work, the effect of imposing costly screens on the creation of copyright would be to deter the creation of a significant number of works that are valuable to the public. Of course, screens would have the beneficial effect of precluding the creation of low private value, low social value copyrights as well, but as we have seen, these works are largely innocuous and do not create the risk of holdup that they do in the patent setting. It is thus unlikely that the social benefits created by imposing costly screens on the creation of copyrights (elimination of innocuous though numerous low private value, low social value copyrights) would be greater than the social costs they would exact (deterring the creation of numerous and important low private value, high social value copyrights).

IV. A UNIFIED THEORY OF IP PROCESS

It seems somewhat puzzle that patents are subject to a system of examination while copyrights vest immediately upon fixation, without any process at all. This disparity has received little attention from scholars,[55] though each of these systems has brought vocal criticism on its own terms. Much of this dialogue seeks to coalesce these two systems. Several scholars have urged the reintroduction of formalities as prerequisites for copyright vesting,[56] while others have proposed reforms that would move patents in the direction of registration.[57] These proposals hold plausible appeal; there is no necessary theoretical difference between the intellectual property rights provided by patents and copyrights, and indeed some work has been done to conceptualize intellectual property as a unified field.[58]

Nonetheless, we believe that the costly screening model we employ here provides a coherent means of explaining the divergent methods by which patents and copyrights are awarded. We offer a unified theory of the administrative processes surrounding intellectual property—a theory of "ip process." Our theory is based on the relative strengths of the intellectual property rights awarded, but not in the most obvious sense. Patents are not examined merely because they involve stronger property rights and thus could do more damage than

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[55] There is a straightforward historical story to be told about this divergence, of course. The modern PTO grew out of the Patent Board established by the Patent Act of 1790. The lack of formalities required for copyrights to vest reflects international norms brought to bear on U.S. law by our obligations under the Berne Convention. Neither of these narratives, however, provides an explanation of why patent and copyright processes have developed in such different ways.

[56] *See, e.g.*, Chris Sprigman, *Reform(aliz)ing Copyright*, 57 STAN. L. REV. 485 (2004) (suggesting that registration should be a prerequisite for property-rule enforcement of copyright infringement); Lawrence Lessig, FREE CULTURE (2004) (discussing the Public Domain Enhancement Act, proposed federal legislation that would charge copyright owners $1 to maintain their exclusive rights after fifty years of protection).

[57] *See supra* note 24 (noting Mossoff and Kieff suggestions for reform).

[58] *See, e.g.*, J.H. Reichman, *Charting the Collapse of the Patent-Copyright Dichotomy: Premises for a Restructured International Intellectual Property System*, 13 CARDOZO ARTS & ENT'MT L.J. 475, 517-18 (1995) (advocating a "unified field approach" for IP systems).

copyrights if granted imprudently, and copyrights do not arise upon only fixation in a tangible medium of expression merely because they are weaker rights that pose little threat if they spring into being haphazardly and easily.

The effect of these differences between patents and copyrights is, instead, indirect. The strength of the intellectual property right defines the distribution of extant rights across various classes of value: because patent rights are broad, high social value, low private value patents do not exist—a patent would allow an inventor to capture much of the benefit from any patent that created significant social value. Similarly, because copyrights are narrow, low social value, high private value copyrights do not exist—they are too easy to engineer around.

Accordingly, costly screens embedded within the patent and copyright systems will disproportionately select against different classes of intellectual property rights. The costly patent screen eliminates predominately low social value patents—there are no high social value patents for it to affect. A costly copyright screen, were one to exist, would eliminate both high and low social value copyrights. A costly patent screen thus enhances social welfare; a costly copyright screen almost certainly would not.

Once the current system of patent examination—as well as a hypothetical system of copyright examination or fees—is understood as a costly screen, the final piece of this puzzle falls into place. The breadth of the patent right creates an asymmetry that the costly patent screen exploits in a way that creates social welfare; the comparatively narrow copyright creates an asymmetry that would interact with a costly screen in ways likely harmful to social welfare. The breadth of the intellectual property right defines the appropriate shape—and cost—of the process used to bestow it.

We hasten to add that we do not mean to claim that the congressional architects of the intellectual property system intended or understood this result. The patent examination and copyright registration systems most likely arose for other reasons, or through historical accident. But it would be odd to imagine that these systems could persist through two centuries if they did not lead to

improvements in societal well-being.[59] The costly-screen theory of ip process shows that this is likely the case, and that there is a deep relationship between how statutory rights in information are constructed and what kind of process is optimal to govern the vesting of those rights.

CONCLUSION

Patents do not come cheaply to applicants. Copyrights, on the other hand, arise costlessly, frequently, and even unintentionally. The stark contrast between the onerous patent examination process and the easy, instantaneous vesting of copyrights seems puzzling. These systems have also drawn criticism as causing valueless copyrights to proliferate while placing unnecessary burdens on patentees. Examining this problem through the prism of costly screen theory helps to make sense of the difference between these very different systems for vesting property rights in information, and reveals one reason that these much-maligned processes may not be as problematic as they are commonly described.

While navigating cumbersome patent examination process can exact social costs, it also has the advantage of eliminating low social value patents (while precluding the creation of no or few high social value patents). Copyright's screenlessness, on the other hand, may permit the proliferation of numerous low social value copyrights, but these copyrights are relatively innocuous, and the ease of vesting assures the continued creation of high social value copyrights that would be eliminated by the imposition of costly process prior to vesting. Our analysis points in the direction of a unified theory of IP process, one that illuminates the foundational connection between how law structures intellectual property rights and how that structure necessitates particular processes for granting those rights.

[59] *Cf.* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW § 21.5, at 614-15 (5th ed. 1998) (arguing that the common law has evolved towards efficiency).