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INFRINGEMENT AS NUISANCE

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*Christopher M. Newman**

Abstract

When should we grant injunctions against infringers of intellectual property? Before the Supreme Court’s decision in eBay v. MercExchange, the presumptive answer used to be “always,” on the grounds that property consists of a right to exclude, and infringement—like trespass—is a direct negation of that right. As property scholars Richard Epstein and Henry Smith have argued, this traditional dominance of property rules serves important purposes, reducing information costs and preventing the systematic undercompensation of rightsholders endemic to a liability rule regime. Nevertheless, there are other common law doctrines—notably accession and nuisance—that sometimes countenance use of liability rules to rescue from holdout certain investors who create value without securing in advance all the property rights needed to realize it. Withholding injunctive relief for nuisance—as Epstein urges we do when there is a large disparity of value between the spillover-creating activity and the damaged one—is tantamount to allowing the acquisition of non-possessory use privileges via accession. This article seeks to explain why these limited departures from strict property rules make sense in the realm of tangible property, and argues that those reasons are particularly salient in the realm of IP. The key insight is that sometimes information as to what property rights will be needed by a productive enterprise can only be generated by making the sorts of investments that give rise to holdout. Moreover, the arguments for applying strict property rules to IP overlook the fact that doing so creates the very sort of liability rule regime with regard to tangible property that Epstein and Smith warn against. While this analysis justifies the denial of injunctive relief in some cases of holdout however, there is an important caveat. Accession doctrine only justifies the use of liability rules where there is great disparity in value, and IP rights lack the sort of fungibility that facilitates such a comparison. Where a patent has been licensed only exclusively or not at all, injunctions may remain the only way to protect entrepreneurial value.

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I. INTRODUCTION

After investing considerable time, effort, and material resources, you have developed an innovative new product. The product’s release date is imminent, and all the groundwork has been laid. Manufacturing is underway, distribution channels are primed, and marketing campaigns have brought pre-release buzz to the desired peak. At this point you receive notice that your product contains some element that infringes intellectual property (IP) belonging to someone else. Perhaps your product is a complex device, one component of which infringes a claim in somebody’s patent. Or perhaps your product is a film, in which copyrighted artwork can be seen hanging in the background of one scene. In any case, the element in question is a small part of the overall product; had you known it to infringe earlier, you would have preferred to design around it rather than pay anything more than a modest license fee. Now this is no longer an option. Because of irreversible investments you have made, the value to you of the

right to use the infringing element no longer depends simply on the intrinsic value it adds to your product as compared to the other means you might have used to achieve the same result. Now, this right is worth whatever it would cost you to pull out of the market, rework your existing product, and start preparing to release it all over again. If an injunction is entered forcing you to do this, you will be at risk of incurring severe losses, perhaps even losing your entire investment, most of which was spent in the development of non-infringing elements.

Assume that such an injunction is sure to be entered in the absence of some agreement between you and the IP owner, with whom you now enter into negotiations. There are two possible outcomes. One is that no agreement is reached, and you are required to incur the losses of withdrawing your product. The other is that you reach a deal allowing you to continue with the product release, but probably at the price of paying a large portion of your revenues—much larger than the portion of the value of your product that derives from use of the infringing element—to the IP owner. Clearly, you will not be very happy with either of these outcomes. Is there any reason, however, why third parties observing the proceedings should sympathize? After all, you were infringing, and the IP owner presumably invested considerable time, effort and material resources of his own in developing the matter protected by IP rights.

There are essentially two reasons why we might be concerned about the dynamic described above. One is fear that parties may fail to come to terms in these cases even where the infringing product would not conflict with any development of the IP by its owner, thus resulting in wasted resources and the loss of potentially large gains from trade. The other is the belief that even if the parties do come to terms, it is undesirable for the IP owner to command a disproportionately large share of those gains where they result primarily from the other party's productive investments.¹ This latter position can be understood as a belief about the demands of equity, based on a particular notion of distributive justice. Or it might be understood as another form of efficiency concern, based on the idea that overcompensating IP owners at the expense of people who make productive downstream use of their works will skew investment incentives in an unproductive manner.² Either way, we would prefer if possible to see

¹ See *eBay Inc. v. MercExchange, L.L.C.*, No. 05-130, Brief Amici Curiae of 52 Intellectual Property Professors in Support of Petitioners, 2006 WL 1785363, *7 (June 26, 2006) (arguing that such a settlement amounts to “holdup money” that is not a legitimate part of the value of a patent, but a windfall to the patent owner).

² See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEXAS L. REV. 1991, 1993 (2007) (“Such royalty overcharges act as a tax on new products incorporating the patented technology, thereby impeding rather than promoting innovation.”).

exchanges in which each party reaps a share of gains proportional to the value it contributed. As a general rule however, we do not override a property owner's right to exclude simply because someone else has put himself over an economic barrel. The Federal Circuit has observed more than once that the right to exclude "is but the essence of the concept of property,"³ and long regarded this as self-evident justification for the long-standing rule that patent owners who won at trial—i.e., who succeeded both in proving infringement and withstanding any challenges to the validity or enforceability of the patent—were presumptively entitled to permanent injunctive relief.

This presumption is no more. Writing for a unanimous court in *eBay v. MercExchange*⁴, Justice Thomas rejected the notion that intellectual property rights axiomatically call for injunctive enforcement, stating that "the creation of a right is distinct from the provision of remedies for violations of that right."⁵ It is up to district courts, exercising their equitable discretion in accordance with traditional principles, to decide when the interests protected by the right to exclude can only be vindicated by actual exclusion. If damages can provide an adequate remedy, or if the balance of hardships or the public interest requires it, a patent or copyright owner's "intellectual property" may be converted into a mere liability owed by the person making unauthorized use of it. Indeed, the Supreme Court's language appears to give IP owners the burden of demonstrating why this should *not* be the result.⁶ In the wake of *eBay*, there is serious debate as to whether, and in what circumstances, courts should spare infringers from the dilemma depicted above by declining to grant an injunction and instead attempting to fix a reasonable level of damages.⁷ The Court's opinion in *eBay* offers no guidance on this question, stating only that in applying traditional equitable principles, courts should avoid "broad classifications" or "categorical rule[s]" that predetermine outcomes in a "broad swath of cases."⁸ Indeed, one might say that the only rule announced in *eBay* is that when it comes to granting injunctions, courts are not allowed to follow rules.

³ *MercExchange, L.L.C. v. eBay, Inc.*, 401 F.3d 1323, 1338-39 (Fed. Cir. 2005) (quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1246-47 (Fed. Cir. 1989)).

⁴ 126 S.Ct. 1837 (2006).

⁵ 126 S.Ct. at 1840.

⁶ See 126 S. Ct. at 1839 (a plaintiff seeking a permanent injunction "must satisfy" a four-factor test before a court may grant such relief, to do which it "must demonstrate" the applicability of the four factors).

⁷ See, e.g., Lemley & Shapiro, *supra* n.2.; John M. Golden, "Patent Trolls" and Patent Remedies, 85 TEXAS L. REV. 2111 (2007) (critiquing Lemley and Shapiro's model of overcompensation to patent owners due to presumptive availability of injunctive relief).

⁸ *Id.* at 1840.

The potential for holdup is not unique to patent and copyright. It pervades property law, and is dealt with differently in different contexts. This makes it impossible to address the question of IP holdup simply by invoking the “concept of property” or the analogy to tangible possessions. Proponents of a strong presumption in favor of enjoining infringement tend to analogize it to trespass or encroachment, situations in which injunctive relief is the norm. In other scenarios, however, such as accession or nuisance, it is recognized that equity will sometimes decline to enter an injunction, instead leaving the property owner to be content (or, more likely, discontent) with damages. We must examine the reasons for, and limits on, these differing responses to holdup in order to decide which provides the better analogy to infringement.

Just as it is not helpful simply to assert that IP should be treated the same as all other “property,” we should be wary of calls to reject analogies to traditional property doctrine altogether. The familiar contention here is that while the right to exclude is necessary to prevent conflicting uses of tangible resources, the resources subject to IP rights are nonrival, making the only question one of incentivizing creation through appropriate monetary reward. While these differences are certainly relevant, they are differences of degree rather than of kind. Tangible property rights and IP rights can both be viewed as attempts to resolve a positive externality problem by creating a right to appropriate the fruits of productive investment—this, after all, is the point of the “tragedy of the commons” parable taught in every first year Property course. As for rivalness, it too is a matter of degree. There is a spectrum of ways in which and degrees to which different uses of the same resource may conflict with each other. While competing uses of an IP resource do not present any problem of physical noncompossibility, it is still conceivable for them to interfere with each other in a manner that diminishes the overall social value of the resource.⁹ With both tangible property and IP, we must guard against the risk that allowing one party to take and pay will result in less social value than protecting the original owner’s right to exclude, both because the resource immediately at issue may be misallocated and because the dynamic effect may be to dampen incentives for investing in resources that can be taken.

The potential for holdup arises when one party makes irreversible

⁹ Take, for example, an original unproduced screenplay. An unauthorized film of this screenplay would not preclude the copyright owner from filming his own version. If the first film to come out is of inferior quality however, it may severely undermine the market for a subsequent high quality version. Similarly, an inept effort to commercialize an invention could fatally undermine the efforts of a more competent party to do so, leading market actors to adopt some other, possibly inferior, competing technology.

productive investments without securing in advance the right to use some unique resource needed to realize the value of those investments. An obvious objection to allowing such parties to escape injunction is that this will encourage more people to do the same, reducing the incentive to secure needed rights in advance and increasing the number of cases in which we are called upon to override owners' right to exclude. The force of this objection in a given context depends in part on how confident we are that such ex ante avoidance is both feasible and desirable. To successfully avoid the risk of holdup ex ante,¹⁰ an investor must correctly answer two questions prior to making significant irreversible investments. First, she must correctly identify all owned unique resources that are potentially implicated by the contemplated project. Having done this, she must then determine whether the contemplated project would, if not licensed, actually violate the property rights of the resource owners. Only after answering these questions is the investor in a position to choose between negotiating the needed property rights, designing around the needed resource, or foregoing the investment altogether. The costs incurred in discovering and acting upon this information are what I term in this context "avoidance costs"—i.e., the costs of avoiding a situation in which one's productive investments are vulnerable to holdout. The more difficult and costly it is to answer the two questions correctly before committing significant resources to a project, the greater the obstacles to ex ante avoidance of holdup.

The primary thesis of this paper is that our willingness to rescue investors from holdup by relaxing property rules in a given context should (and in fact does) depend in large part on the nature of these avoidance costs, and that such costs are likely to be particularly acute in the realm of intellectual property. In particular, where the process of productive investment itself generates information that is necessary or useful to determine what property rights an enterprise will need to acquire, there is far less to be gained by holding investors to a high standard of ex ante avoidance.

The analysis begins (in Part II) by discussing the nature of the holdout problem, and the difficulty of distinguishing strategic holdout from refusals to sell based on bona fide idiosyncratic or entrepreneurial value. This leads (in Part III) to a reconstruction of the problems of undercompensation and information costs that have been identified by Richard Epstein and Henry Smith as strong reasons to adhere to property rules in most transactions between private parties, despite the occasional risk of holdup.¹¹ The advantage of property rules¹² (in Smith's terms,

¹⁰ By "ex ante" here I mean, "prior to making the irreversible investments that render one vulnerable to holdup."

¹¹ See Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property*

“exclusion strategies”) is that they reduce information costs by using simple physical boundaries as proxies for the open-ended and undefined set of potential uses of a resource. By moving to liability rules (“governance strategies”), we increase information costs, as both public and private actors are required to make fine-grained distinctions between uses in order to recognize, comply with, and enforce property rights. We also create systematic opportunities for undercompensation of property owners, due to the inevitable gap between their knowledge as to the entrepreneurial value of a resource and that embodied in the criteria used to determine value for liability purposes. Using this analysis as a baseline, the Parts IV and V next examine the spectrum of property cases to see the role played by avoidance costs in determining when we nevertheless choose to relax strict enforcement of the right to exclude.

At one end of the spectrum are possessory uses of land. We generally grant injunctive relief for trespass and encroachment, and the doctrine of accession gives landowners full ownership of any unauthorized improvements made to their land. This makes sense, because one’s need to make possessory use of land is generally easy to identify in advance, and there is little ambiguity as to whether such uses will require a negotiation of property rights. When it comes to accession of chattels, we are slightly more lenient, allowing certain good faith improvers to retain the value they have created while paying restitution for the value of what they took. Such takings are rare, as we only allow them where the improver had good faith reasons for believing she had the right to use the chattel, and in reliance on those reasons, transformed it into something vastly more valuable. Though rarely applied, the doctrine illustrates the principle that equity will relax the strict right to exclude where this can be done without inviting opportunism, and where enforcing it would lead to clear distributional inequity.

Next is the case of rival non-possessory uses of land, i.e., nuisances. The law of nuisance is notoriously convoluted, but it is clearly several steps removed from strict enforcement of the right to exclude. Before courts will even consider enjoining a spillover effect as a nuisance, it must meet the threshold requirement of significant harm. Even where this standard is met, whether the nuisance will be enjoined usually depends on a weighing of multiple factors, including the value of the nuisance-creating activity relative to that of the damage it causes. While cases will vary, perfect ex ante avoidance is likely to be extremely difficult where spillover effects are

Rules, 106 YALE L.J. 2091 (1997); Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719 (2004).

¹² The terms “property rule” and “liability rule” stem, of course, from Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972).

involved. This is because one can rarely predict with perfect accuracy the exact incidence and severity of such effects, or the relative economic values of the offending activity and the ones that may be damaged. For some types of productive activity, actual trial (thus entailing the kinds of investments that give rise to the risk of holdup) may be the only way to find out what use rights the enterprise actually requires to function, and whether it is valuable enough to make the purchase of those rights worthwhile. Tellingly, even a strong proponent of property rules like Epstein holds that in nuisance cases, courts should decline to issue injunctions where there is a large disparity of demonstrated value between the offending activity and the one damaged. This rule of thumb amounts to permitting the acquisition of non-possessory use privileges by accession.

Part VI addresses the area of intellectual property. Smith has argued that essentially the same analysis of information costs favoring an exclusion strategy for tangible property applies to IP as well, because of the benefits of modularity that arise from bundling all use rights pertaining to a given intellectual work within the same party's right to exclude.¹³ This conclusion follows only to the extent that we believe the reified abstraction of an intellectual work to have boundaries that are as easy to identify and avoid interference with as the boundaries of physical objects.¹⁴ This, I argue, is far from the case. The "boundaries" of an intellectual work consist of nothing but an abstract description of potential fine-grained uses of tangible property. IP rights amount to negative easements in gross that appropriate specific use privileges tangible property owners would otherwise have with respect to their own property. In Smith's terms, to create IP rights governed by an exclusion strategy is inevitably to create a governance regime in tangible property. Indeed, the manner in which patent rights are acquired can be analogized to a liability proceeding in which takers offer information to tangible property owners as the price for a compulsory expropriation of use privileges.¹⁵ The same dynamic of systematic undercompensation that Smith depicts in his analysis of governance regimes is applicable here, in that some property owners will inevitably receive information that is worth less to them than the use privileges lost.

¹³ See Henry E. Smith, *Intellectual Property As Property: Delineating Entitlements In Information*, 116 YALE L.J. 1742 (2007) (discussing ability of property rules to reduce information costs by promoting modularity, and arguing that this makes exclusion strategies as advantageous for intellectual as for tangible property).

¹⁴ See *id.* at 1795 (asserting that this is the case).

¹⁵ Parallel arguments can be made with respect to copyright law, but there are significant differences between patent and copyright law that require separate discussion. In the present paper I construct the general argument and apply it to patent law, leaving the discussion of copyright law for a future project.

While the *ex ante* avoidance costs associated with patent law are high enough to justify application of the accession rule, there is a serious obstacle to doing so. Accession doctrine requires a comparison of the value added by the taker to that of the original resource. The value of a patent—or to be more precise, of specific use privileges to technology covered by one or more of that patent’s claims—will often be very difficult to determine because of the lack of a robust market. Patent owners also face higher information costs than landowners, it being far more difficult for them to detect and forestall infringement than it is for a landowner to take action against a nuisance before its economic value becomes too entrenched. If patent owners are to have any ability to protect and develop the entrepreneurial value of their IP resources against rival uses, we must not apply the accession rule to patent rights that have been licensed only exclusively or not at all.

By choosing to license a protected use nonexclusively, an IP owner creates a market for that use and signals that there is no entrepreneurial value to be protected through exclusivity. In other words, the actions of third party improvers in commercializing the use are not *rival* to her strategy for earning returns; so long as they pay up, they *are* that strategy. The primary justification for the right to exclude—protection of one rival use from another—thus does not apply. This is not a reason to stop providing property rule protection altogether; an assumed right to exclude is the only basis on which the market can perform its function of assigning appropriate value to the use rights in question. If, however, it is apparent in a given case that the market value of the protected use on its own is small compared to the value of the investments that would be destroyed by an injunction, then we are justified in declining to issue one and relying on the mechanism of punitive damages to protect the integrity of the market price by creating continued incentives for *ex ante* avoidance to the extent feasible.

II. THE PROBLEM OF HOLDOUT.

As a general matter, holdout power is said to arise when B needs a unique resource owned by A, such that each can deal only with the other for a useful exchange to take place.¹⁶ Why exactly is this a problem? If we assume that B values the resource more than A, why would we not expect B simply to purchase it from A in a mutually beneficial exchange? Or if A refuses to sell to B, why do we not simply conclude that A in fact values the resource more than B, which means that the goal of economic efficiency—i.e., the dedication of resources to their highest-valued uses—is furthered by

¹⁶ See Epstein, *supra* n. 11 at 2094 (1997).

the refusal? Given that there are only two, readily identified parties to the transaction, it seems at first blush that transaction costs should be about as low as they ever are, making it unclear why we should regard these situations as posing any extraordinary risk of market failure.

The refusals to sell that we tend to label “holdouts” are those in which we believe—and we should always ask ourselves what this belief is based on—that B in fact values the resource more than A, and A’s refusal to sell is merely “strategic.” A basic hypothetical example would be the owner of the last parcel of land needed to complete a railroad. Without the railroad project, the market value of the land would depend on its other known uses, such as the value of the crops that could be cultivated on it, or of whatever other improvements were present or contemplated. But once the land becomes necessary to the completion of the railroad, the value of the right to exclude others from the land becomes equal to the value of the completed railroad. All of the investments made in building the railroad up to this point, as well as all the investors’ hopes of future profits, are hostage to the land owner’s willingness to sell, thus enabling him to “hold out” for as large a sum as he thinks the investors are able and desperate enough to pay. Even at this point, we might still ask, “so what?” Don’t all sellers attempt to the extent possible to feel out buyers in order to squeeze the highest possible price out of them? Why does this dynamic seem particularly troublesome in the cases we characterize as “holdouts”?

As noted above, there are two different types of concern that have been expressed with regard to holdout situations. The first is based on economic efficiency, and worries that holdout power may prevent potentially large social gains from trade from being realized. The second type of concern is distributive, and asserts that even if an efficient transaction takes place, there is something socially undesirable about the resulting terms of exchange.

A. *Holdout as failure of efficiency*

Why are holdout scenarios thought to be particularly conducive to market failure? The explanation usually given is that these situations involve a large gap between the value of the resource to the two parties. As Richard Epstein explains, if A values the resource at 10 and B at 1000, then any sale price between 11 and 999 would be mutually beneficial. Since no such price can be determined in the abstract however, each side has a strong incentive to hold out for the largest fraction of the gain.¹⁷ This gives rise to two possible scenarios in which the potential social gains from trade fail to

¹⁷ *Id.*

materialize. In one, the hardball tactics employed by both sides cause the negotiation to break down, so that there are no gains whatsoever. In the other, a deal is struck, but the costs of narrowing the wide range of potentially acceptable prices down to the one ultimately agreed upon are so large that they dissipate some or all of the social surplus.¹⁸ If there is more than one owner in the position of A, then there is another reason why it is likely that no deal can be struck: all these owners must be able and willing to bargain collectively with B over division of the gains from trade, otherwise no concession on B's part to any individual owner will guarantee B's ability to realize the surplus.

This way of describing the holdout scenario glosses over an important though seemingly elementary point: What exactly do we mean when we say that A "values" the resource at 10? Obviously in the context of this negotiation A values it at far *more* than 10, otherwise A would not be so tenacious in demanding so much more than that. The entire mode of analysis in which we are engaging when we speak of Coasean bargaining to reach efficient outcomes is premised on the assumption that economic value is subjective, and can be measured empirically only in relative terms and only through the preferences revealed by choices people make in action.¹⁹ If A is offered ten dollars for his land and refuses, then by definition he values that land more than ten dollars. Indeed, assuming that A is not under duress, the statement "he values the land more than X" means nothing more than "he would refuse to sell it for a price of X." Why, then, do economists of all people persist in describing the holdout scenario as one in which A refuses to sell for 10 even though "in actuality" he only values it at 10?²⁰ In attempting to answer this question, it is worth pausing to consider that there are at least three very different types of scenario that we as observers might label as apparent instances of "holdout."

The first, which I label "idiosyncratic holdout," is one in which A places a genuine subjective value of more than 10 on his present use of the resource, but does so for reasons to which no market can assign value. An example would be a person who refuses to sell his home at market value because of his sentimental attachment to it. Because the satisfaction A gets

¹⁸ *Id.* In Epstein's example, the potential social surplus from trade is equal to 1000-10, or 990. If the parties ultimately agree on a price of 400, A realizes a gain of 390 and B of 600. If A and B spent 300 and 400 respectively in order to reach this agreement however, the total surplus has been dissipated down to 290.

¹⁹ See, e.g., A. Mitchell Polinsky, AN INTRODUCTION TO LAW AND ECONOMICS 10 (1983) (referring to this as the principle of "consumer sovereignty"); Ludwig von Mises, EPISTEMOLOGICAL PROBLEMS OF ECONOMICS 167-82 (1981).

²⁰ See e.g., Calabresi & Melamed, *supra* n. 12 at 1106-07 (discussing holdout in terms of a divergence between the "price demanded" and "the value which the sellers in actuality attach.")

from continuing to live in this home cannot be transferred to anyone else, it cannot be valued on any market. Nevertheless, A's refusal to sell is not strategic—he is merely demanding an amount that is truly adequate to compensate him for the value he is giving up. Because the basis for A's demand cannot be readily evaluated by others, to third parties it may look as though A is simply resisting the consummation of an efficient exchange. If we assume A is stating his reasons for refusing to sell in good faith however, the subjective theory of value gives us no basis on which to second guess his valuation of the utility he is gaining from the resource. We can say only that A's use has a higher value than that of any offer he refuses, and therefore all is right with the world so far as efficiency is concerned.

The second type of apparent holdout I label “entrepreneurial holdout.” This occurs when A believes, for reasons not known to others, that in the future it will be possible to put the resource to a use worth more than its present value of 10. Here too, A's refusal to sell for 10 is not merely a stratagem to extract a higher price in the present from B—in principle, A would be willing to sell for any price that exceeded his assessment of the resource's future value, discounted over the period of time he believes it will take to realize that value. A may be presently unable, however, to demonstrate persuasively to others the basis for his assessment of the resource's future value. Or A may wish to keep the information to himself in order to be in a position to maximize his profits when the time is right. Either way, to third parties it may once again appear that A is simply impeding the realization of an immediate social gain, but we as economists cannot deny that A in fact values the resource at more than 10. Since A's valuation is not based on a purely subjective assessment of utility but on an estimation of future uses and their uncertain market values,²¹ there might be room for disagreement as to its accuracy. In this case, whether we regard A's refusal to sell as efficient depends on whether we think he is likely to have a more accurate assessment of the resource's future value than B.

The third type of holdout—“strategic holdout”—is the one Epstein had in mind in the description given earlier. Here, A does not derive any value greater than 10 from his present use of the resource. Moreover, A has no reason to believe that he—or anyone other than B—will ever be able to put the resource to a use that yields more than 10 in value. Rather, it is only A's knowledge that B stands in a position to put the resource to a higher-value use, and that B needs this specific resource in order to realize that

²¹ Or it could be based on A's assessment of the subjective utility he will gain from future uses of the resource, in which case this is just another variety of idiosyncratic holdout.

value, that causes A to perceive the resource as having an exchange value greater than 10. There is nothing surprising about this reaction on A's part; any rational actor values a resource based not merely on what he can do with it, but on what he believes he can get for it.²² Indeed, much important economic activity consists of acquiring resources for the sole purpose of selling them to others who are better positioned to use them. It is thus misleading to insist, as we tend to do when discussing strategic holdout, that A only values the resource at 10. It would be more accurate to say that A only values his ability to *use* the resource at 10, but values his ability to *exclude* B from it at more than that. Our tendency to refer to A's *use value* as A's "actual" value reflects the perspective of the economist whose goal is overall efficiency, and sees that so long as the resource remains in A's hands it will be dedicated to uses valued at no more than 10. In other words, it's not that A values the resource at 10, it's that *we* only value his continued possession of it at 10.

B. Holdout as distributive injustice

Assume now that A has both the knowledge and the wherewithal that enable him to hold out, and is savvy enough to do so without either torpedoing the exchange or allowing an exorbitant portion of the gains from trade to be dissipated in negotiation. As a result, the efficient transfer occurs and A is able to extract the lion's share of the surplus as the sale price of the resource.²³ Is there any reason why we should regard this result as unjust? In a trenchant essay on the property rules v. liability rules debate, James Krier and Stewart Schwab asserted that there is not, because the surplus "simply represents the gains from trade, to which neither party is, *prima facie*, entitled."²⁴ This assertion is clearly true so long as we remain within the realm of Coasean efficiency analysis, but verdant though that valley is, few of us reside there without dual citizenship elsewhere.

One salient reason why we might regard it as unfair for A to get the lion's share of the surplus is a belief that B contributed more than A to its production in terms of such inputs as initiative, effort, skill, investment, and risk. While a rigorous philosophical defense of the premise that investment of productive inputs ought to give one a claim on any resulting value is

²² Another way of putting this would be to say that in a market economy, selling something is one of the most important things you can do with it.

²³ Say for example that the resource sells for 900, with each side incurring 50 in transaction costs. The social surplus is 890, with 840 going to A and 50 going to B.

²⁴ James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 466 (1995) (critiquing the assumption that liability rules are better in situations of high transaction costs).

beyond the scope of this article, the notion is both intuitively appealing and deeply embedded in our society. I do not claim that this criterion of distributive justice is the *only* valid or important one; merely that it is generally regarded as both. It is also particularly relevant to the problem of intellectual property, as owners of IP rights tend to feel strongly that it is *just* for them to command holdout premiums, precisely because those rights represent value that is entirely the result of their productive efforts.

It is important to distinguish between a criterion of distributive justice holding that gains from trade should be divided in proportion to productive input and a labor theory of value, which holds that the value of any resource is determined by the quantity of effort that went into its production. Since the marginal revolution in economic theory, mainstream economists have rejected the latter theory, instead viewing the value of a resource as determined by its marginal utility and relative scarcity. A resource has utility to the extent that it satisfies subjective human wants, and it may do so (or fail to do so) regardless of the amount of labor that went into its creation. As both the content of human wants and the scarcity of any given resource can change at any time for an indefinite number of reasons which may or may not be attributable to deliberate human action, we really ought to have some doubt as to whether under the subjective theory we can be confident that *any* human action produces value. At the very least, any such judgment will be beset by the same types of difficulties we encounter in applying the legal concept of “proximate cause.” Nevertheless, we need not succumb to radical epistemological despair. Despite the existence of constant change there is also sufficient continuity in our constellations of wants and resources to make successful productive effort possible. While the value of a given resource will never be entirely attributable to human effort, we will often be able meaningfully to identify certain human actions that have contributed to a resource’s present ability to satisfy particular wants.²⁵ Moreover, distributive justice requires only that we make such judgments in rough comparative terms, sufficient to decide whether one claimant has a significantly stronger case than the other.

III. THE ADVANTAGES OF PROPERTY RULES.

I have described two reasons why we might regard holdout

²⁵ Any complete theory of distributive justice along these lines would have to decide whether and how to distinguish between actions that produce value intentionally (i.e., where the increased ability to satisfy human wants is of the type and magnitude that the actor intended to achieve) and those that do so unintentionally (as where unforeseen circumstances render the results of one’s efforts valuable in a way or to a degree that one did not intend).

scenarios as problematic. The first is an efficiency concern—that these scenarios are likely either to thwart the transfer of resources to higher-value uses, or to consume a large part of the resulting social surplus in transaction costs. The second is a distributive justice concern—that even when the efficient result is achieved, holdout scenarios result in a disproportionate share of the gains from trade being reaped by parties who are comparatively undeserving in terms of their productive contributions. Given these reasons, the next question is why we nevertheless tend to allow resource owners to wield holdout power, with intervention to prevent this being the rare exception rather than the rule.

A. *Reasons for not attempting to correct holdout inefficiency*

A central objection raised against the use of liability rules is that they are bound to lead to undercompensation of resource owners, an effect that has been dubbed “Epstein’s Law.”²⁶ Epstein’s Law rests on two reasons why compensation will systematically fall short. The first is that there are costs to expropriated resource owners that the compensation mechanism cannot address even in principle. To begin with, takings damages necessarily ignore all elements of subjective loss.²⁷ When we attempt to determine the fair value of someone’s house, we can only look at those aspects capable of being valued on a market. We do not even attempt to take into account such factors as the owner’s sentimental attachment to the home, his social investment in the neighborhood and local knowledge concerning its available resources, his comfort in familiar habits of everyday life. Such intangibles can be given economic weight only when protected by the right to engage in idiosyncratic holdout, i.e., the right to exclude.

Nor is it only subjective losses that elude compensation, but consequential damages as well, such as the disruption that occurs upon the loss of an asset needed for operation of one’s business.²⁸ As Epstein points

²⁶ See Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEXAS L. REV. 783, 788 (2007):

Specifically, the objection is not just that courts will not identify damages accurately but that the deviation will be systematic in one direction. As Richard Epstein puts it, the argument is that “[t]he risk of undercompensation in such situations is pervasive,” thereby undermining investment incentives. As a shorthand, we call this “Epstein’s Law.”

(citing Epstein, *supra* n. 11 at 2093).

²⁷ See Calabresi & Melamed, *supra* n. 12 at 1125 (“Liability rules represent only an approximation of the value of the object to its original owner and willingness to pay such an approximate value is no indication that it is worth more to the thief than to the owner.”).

²⁸ See Epstein, *supra* n. 11, at 2093. It is not actually impossible in principle for a

out, commercial relations also rely heavily on the expectation that goods promised will actually be tendered, and their substitution with expectation damages is not regarded as satisfactory.²⁹ This is because the damages are “insufficient to cover the dislocations brought on by the exceptions and create further ripple effects by destabilizing relations that the innocent and disappointed buyer might have with his own customers.”³⁰ In a broad sense then, the threat of non-consensual takings undermines the security of possession and security of exchange needed both to maintain a complex social order and conduct a satisfying personal life.³¹ All of these concerns fall under the rubric of use value—i.e., they pertain to the utility owners get from being able to count on making use of specific physical resources without interference.

The second reason underlying Epstein’s Law is that even where we make efforts to compensate for those elements of use value that should in principle be susceptible of objective appraisal, there will be systematic bias toward undervaluation.³² Though the law is named after Epstein, the most thorough explanation of this dynamic has been given by Henry Smith.³³

Smith’s analysis of property and liability rules focuses on the costs of producing information about resources and activities. Any resource can be seen as a collection of potentially valuable uses, some of which will interfere with others. To achieve allocative efficiency, we must produce, communicate and act on information about the costs and benefits of actual and potential uses of resources.³⁴ This gives rise to a number of categories of costs. There is the cost of investigating resources and their potential uses (assessment costs). There is the cost of making a decision as to which use or set of uses has the highest value (allocation costs). There is the cost of informationally implementing allocative decisions by creating and maintaining a set of rules that govern day to day use of the resource (rulemaking costs). There is the cost of communicating these rules to those who need to know them (promulgation costs). There is the cost to those who need to know the rules of informing themselves about and complying with them (compliance costs), and the costs of monitoring and enforcing

takings system to attempt to provide compensation for consequential damages the same way a tort system does. It is not, however, the norm. See RICHARD A. EPSTEIN, *TAKINGS* 51-56, 80-86 (1985).

²⁹ See Epstein, *supra* n. 11 at 2099.

³⁰ *Id.*

³¹ See *id.* at 2093.

³² See *id.* at 2093; Lemley & Weiser, *supra* n. 26 at 788 (“Epstein’s Law holds that would-be purchasers of a property right invariably prefer liability rules and use them as an opportunity for government rent-seeking.”).

³³ See Smith, *supra* n. 11 at 1764-68.

³⁴ *Id.* at 1753-54.

compliance (monitoring and enforcement costs). All these costs must be incorporated into our overall evaluation of the relative efficiency of property rules versus liability rules. Smith focuses on the consequences for these categories of costs when decisions as to resource allocation are made by individual owners as opposed to public officials.

Smith describes two broad strategies for making use decisions about resources: the “exclusion” strategy, and the “governance” strategy.³⁵ An exclusion strategy delegates to private property owners all decisions concerning assessment, allocation, and rulemaking. In order to effect this delegation, the exclusion regime employs simple boundaries that serve as a rough proxy signal for the open-ended and undefined set of potential uses of the resource. Anyone who transgresses these boundaries without the owner’s consent is subject to sanctions, without any need for officials to identify or evaluate the specific use being made by the transgressor. As we move toward a governance strategy, on the other hand, we use some form of collective decisionmaking to pick out and evaluate resource uses, dealing directly with some or all of the issues that are left to owners to handle under exclusion. To the extent that we move in this direction, some official body will have to set rules governing these matters, so that the functions of assessment, allocation and rulemaking will be performed collectively rather than privately. This in turn means that these functions will have to be performed and justified publicly in accordance with legal procedures, which is already a reason why we would expect the associated costs to be higher than in an exclusion regime.

In addition to being costly, the public nature of decisionmaking in a governance regime is what gives rise to the likelihood of undercompensation to owners when resource uses are allocated to other parties (“takers”). This is because there will always be a gap between the best known uses of a resource and the best publicly *verifiable* uses, a gap that takers can and will take advantage of. There are two interrelated causes of this gap. The first follows from the nature of the entrepreneurial function, which consists of making decisions about resource use in response to various degrees of uncertainty.³⁶ Entrepreneurial owners develop information needed to turn uncertainty into risk and make bets on such information before it can be credibly communicated to others. Under a

³⁵ *Id.* at 1755.

³⁶ By uncertainty, we mean not just risk, but risk that cannot be expressed as an actuarial probability. As Smith points out, entrepreneurs profit from the opportunities afforded by uncertainty; if everyone shared identical information about risk, entrepreneurial profit would vanish *Id.* at 1724-25; *see also* LUDWIG VON MISES, HUMAN ACTION 293 (3d ed. 1966) (“If all entrepreneurs were to anticipate correctly the future state of the market, there would be neither profits nor losses.”).

governance regime, an opportunistic taker need only invest enough in gathering information—or in informationally free-riding on the present owner—to determine that a resource is worth more than its objectively verifiable value, and she is in a position to profit by taking and undercompensating the owner. An owner engaged in what we earlier termed entrepreneurial holdout has decided that the best time to put a public shared valuation on the resource is sometime in the future, and an exclusion regime internalizes both the benefits of getting this right and the costs of error, giving the owner proper incentives to invest in developing information about the resource's best uses.³⁷ Under the governance regime, an opportunistic taker can force officials to undertake a public valuation of a resource now even though the best time to do so may be in the future.³⁸

The second cause of the gap is the inherent imperfection of the proxy signals necessarily used to determine use values in a governance system. To make publicly verifiable determinations of value, officials will have to establish objective criteria that are to guide the determination. Thus, in a governance regime the allocation function itself involves internal costs of rulemaking, promulgation, compliance and enforcement (i.e., those associated with the procedures of either eminent domain hearings or lawsuits for damages) in addition to those that will be incurred to effectuate the allocation after it has been chosen. Once these evaluative criteria are set, they function like the price for the fruit in a large bin, allowing takers to incur information costs to identify subsets whose members have an average value higher than the one determined by the officials.³⁹ To use an example cited by Smith, if redness is the signal used to determine the quality of apples, then takers will learn to identify those apples that are underpriced because they are actually better than their color would indicate. Meanwhile, people will invest in ways to make apples appear redder without actually improving their quality, thus causing the correlation of the color with the quality it was supposed to signal to deteriorate over time.⁴⁰ A governance regime will have to constantly invest in reevaluating and recalibrating its criteria for determining use values if it wishes to stay ahead of manipulation and deterioration. In other words, rulemaking costs will be ongoing, and will again be high because of the public nature of the deliberations involved.

In an exclusion regime, because assessment, allocation, and rulemaking with regard to resource use are delegated to private owners, the only thing public officials must do is protect that delegation. This too

³⁷ Smith, *supra* n. 11 at 1763-64.

³⁸ *Id.*

³⁹ *Id.* at 1764-65.

⁴⁰ *Id.*

requires rulemaking and promulgation, but of a much simpler kind than that directed at daily governance of uses, because it focuses on rough and low-cost signals that serve indirectly to protect the large and unspecified set of uses delegated to the owner.⁴¹ The prime example of this is the boundary around a parcel of land. To determine whether the owner's use rights are being violated, an official need only focus on the physical location of actors and objects with respect to the boundary, not their activities with respect to the resource or the value of those activities. These signals are far less vulnerable to manipulation and deterioration, and thus the costs of public rulemaking far smaller than those incurred when rulemaking involves the direct identification and pricing of specific uses.⁴²

A further consequence of the undercompensation and opportunism endemic to governance regimes is an increase in the costs associated with self-help. These costs exist even in exclusion regimes, because the public mechanisms for protecting and enforcing property rights are far from perfect. Thus even people who have theoretically absolute legal rights to exclude will invest in fences, guards, anti-theft devices, etc., to thwart takings by people unimpressed by theoretical absolutes. In a governance regime, these costs are augmented, because owners are moved to protect not only against illegal appropriation of the resources in their control, but against appropriations that are legal but for which they know the liability rules will undercompensate them. Would-be takers, in turn, are motivated to invest in ways to circumvent the owners' self-help measures.

a. Compliance, monitoring, and enforcement costs.

In addition to the problem of undercompensation and the heightened costs of allocation and rulemaking, governance regimes face heightened costs of promulgation, compliance, monitoring, and enforcement. As we have already seen, exclusion regimes rely on crude boundaries, such as the contours of physical objects, to protect an undefined and open-ended set of potential uses. This makes for relatively low compliance costs, as it is relatively easy for third parties to know when they are at risk of interfering with owners' property rights. When I see an unfamiliar car parked somewhere, I know automatically that I am excluded from using it in any way. I need not know who the owner is or weigh the specific use I might have made of the car against any standard. Such ease of notice is important, because property rights are rights *in rem*—i.e., they can be enforced against the rest of the world in perpetuity, without reference to any relationships between particular persons. This means that a wide and indefinite group of

⁴¹ *Id.*

⁴² *Id.*

people will have to incur information costs in order to comply with them. For this reason, property rights are usually subject to mandatory limitations, such as the *numerus clausus* doctrine, which limits to a menu of standardized forms the types of property rights and the ways in which they can be subdivided.⁴³ Under a governance regime, determining whether or not at any given time I can use any given parked car (including my own), and for what, could require me to research the applicable use rules promulgated by officials and investigate to see whether designated circumstances under which use is permitted in fact obtain. As the number of defined use-rights increases, so do the compliance costs of those who must take them into account when acting. Monitoring and enforcement costs follow suit in this regard; the more fine-grained one's rules governing use are, the costlier it is to detect violations, and it is far easier to apply a property rule than to value uses in order to determine an appropriate level of damages.

To sum up, in order to decide whether overall efficiency would be served by a policy of intervening in cases of holdout we need to weigh the following costs:

<u>Costs of maintaining exclusion regime (i.e., permitting holdout to take its course):</u>	<u>Costs of using governance regime (i.e., of intervening in holdout):</u>
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Efficiency losses (i.e., failure to dedicate resources to highest value use) caused by:

- 1) strategic holdout (where it prevents efficient transfer from occurring)
- 2) entrepreneurial holdout (where it is based on overestimation of resource's future value)

Efficiency losses (i.e., failure to dedicate resources to highest value use) caused by:

- 1) Failure of liability rules to account for idiosyncratic value.
- 2) Consequential losses, including the undermining of expectations of stability in possession.
- 3) Tendency of liability rules to facilitate opportunism based on manipulation/deterioration of use value proxies.

Increased administrative costs:

⁴³ *Id.* at 1768-69. See also Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 24-42 (2000).

- 1) Increased assessment and allocation costs due to need for collective decisionmaking.
- 2) Increased rulemaking costs due to signal deterioration and manipulation.
- 3) Increased promulgation, compliance, and enforcement costs due to broad application of fine-grained use rules.
- 4) Increased self-help expenditures.

This comparison suggests that the strong preference our legal system shows for protecting possessory interests in tangible resources with property rather than liability rules (or in other words, for allowing strategic holdout to run its course) is justified by the goal of efficiency. Indeed, to the extent that we remain faithful to the subjective theory of value it is not clear that empirical observation can *ever* provide grounds for overriding an instance of holdout in the name of efficiency, given that the owner's refusal to sell renders his use the highest-valued one by definition.

b. Why we encourage ex ante avoidance of possessory holdout.

By refusing to intervene in holdout scenarios, we give would-be purchasers an incentive to avoid becoming caught in them. According to our analysis however, the only way in which a would-be purchaser can create a holdout situation is by generating a potential surplus. Isn't there a cost in discouraging people from doing this? In fact, it is not the cultivation of the surplus per se that we want to discourage, but the failure to secure needed rights to resources before doing so. Might one not argue though, that just as owners of resources have incommunicable entrepreneurial information, so do would-be purchasers? Indeed, while we may think owners are generally in the best possession to perform the function of assessment, we can't seriously think that this function should be exclusively exercised by them. How many efficient transactions would be missed if not for the entrepreneurial efforts of would-be purchasers who see potential value missed by current owners? By taking productive steps that bring the potential surplus closer to realization, the would-be purchaser renders her entrepreneurial vision more concrete and hence more susceptible to appraisal by third parties. Rather than having an allocation decision made based on the competing speculations of the owner and the purchaser, it can now be made based on a more concrete demonstration as to one of the

productive uses to which the resource can be put.

There are a few reasons why this reasoning is flawed. First, most of the knowledge likely to be generated by B's committing of productive inputs toward the realization of her intended use is knowledge pertaining to whether that use is feasible on a practical level. For example, building the entire course of a railroad but for the stretch that would traverse A's property would effectively demonstrate that given the right to use this property, the railroad could be completed. The question of entrepreneurial assessment to be answered, however, is another one entirely. It is not whether the railroad can be built, but whether the value generated by that railroad will be greater than the value generated by A's real or intended use of the land. This question can never be answered empirically; as the two uses are mutually exclusive, we will never be able to compare them in practice. There are various means by which we can attempt to predict which use would generate more value, such as research into the likely shape of consumer demand, but the accuracy of these means will probably not be altered much by the existence of a nearly completed project. Meanwhile, in proceeding with the project the would-be purchaser commits scarce inputs of her own to an enterprise that may or may not be the most efficient use of the resource. If she is wrong, either the resource must be allocated inefficiently or those inputs will be wasted. Collective decisionmakers are likely to give these tangible sunk costs greater weight than the owner's subjective or entrepreneurial judgments. Whereas if A and B make the allocation decision through *ex ante* negotiation before any other resources are committed, while they may still err, there will be no risk of additional waste.

Another way of thinking about this is to apply the heuristic device of the "single owner," sometimes used in law and economics as a way of getting at the efficient result in a situation where cooperative behavior among multiple parties is not possible.⁴⁴ To apply the rule, we imagine that all the resources whose allocation is at issue were under the control of a single owner, and ask what he would do. Of course, this approach doesn't help us to pierce the limits on our efficiency-discerning abilities posed by the subjective theory of value—the answer as to what the single owner would do depends entirely on the state of knowledge and preference scale of the owner we choose to imagine. The single owner rule may, however, help us to distinguish actions that are valuable to the process of resource allocation from those that are wasteful. Thus, if we imagine our landowner and railroad entrepreneur to be the same person, we can see that whatever decision this person might ultimately make as to whether building a railroad

⁴⁴ See Richard Epstein, *Holdouts, Externalities, and the Single Owner: One More Salute To Ronald Coase*, 36 J. LAW. & ECON. 553, 556-7 (1993).

was worth more than other potential uses of the land, one thing she definitely would *not* do is lay all but the last mile of track before making that decision.

B. Reasons for not attempting to correct distributive injustice.

If there are dangers in collectively evaluating and allocating the various possible uses of a given resource, they would be compounded exponentially by the difficulties we would face in attempting collectively to determine the just distribution of the gains from each transfer of that resource. Smith's argument for the advantages of reducing information costs by means of rough proxies applies to this problem as well. Just as the right to exclude functions as a delegation to the property owner of all decisions concerning resource use, it also functions as an assignment to the property owner of all changes in the resource's exchange value occurring during the period of ownership. Just as we know that an owner's decisions regarding resource allocation are not necessarily efficient in all scenarios, we know that the changes in a resource's value can never be attributed entirely to the owner's productive inputs. In each case, however, we have reason to believe that the delegation is likely to roughly mimic the desirable result more often than not, and more to the point, to do so often and well enough to make most errors less costly than the cost of intervening to correct them. Second guessing the distributive justice of each transaction would require us to promulgate standards for determining the "just price," and the signals used as proxies for productive input would be subject to the same forms of deterioration and manipulation as are proxies of use value. Moreover, these interventions into the price system would severely disrupt its allocative function of providing information to sellers and buyers about supply and demand.⁴⁵ The efficiency costs are so high that only an extreme aversion to any possibility of windfall profits could induce us to accept them.

IV. EXCEPTIONS TO THE EXCLUSION STRATEGY

A. Eminent domain

Our obeisance to the theory of subjective value has its limits. There comes a point in practice when we simply do not believe the failure of A and B to strike a deal really demonstrates that A's subjective enjoyment of the resource outweighs the value that would be generated by B's potential

⁴⁵ See Friedrich Hayek, *The Use of Knowledge in Society*, American Economic Review, XXXV, No. 4, September, 1945, 519-30.

use. It may be that we think B's potential use would create positive externalities whose value cannot be captured by B and offered to A in exchange for the resource, so that B's failure to offer a price A is willing to accept does not accurately reflect the relative values of the two uses. More fundamentally, even if A is refusing a price that accurately reflects the value of B's potential use, there is a point beyond which we are simply unwilling to recognize A's subjective enjoyment of a resource as having a value greater than the tangible benefits we expect to gain from that use. We need not be able to see or measure utils to believe there is a limit as to how many can dance on the head of a pin, and when an individual asserts that the enjoyment he gains from living on his land is greater in magnitude than the aggregate of all the benefits from vastly improved transportation that a completed railroad will provide to hundreds of thousands of others, we are likely to demur. In such cases, the risk of strategic holdout is perceived as being far greater than that of ignoring or discounting A's idiosyncratic value or entrepreneurial judgment.

Even granting that we may sometimes need to discount idiosyncratic losses in the face of an apparently great potential surplus, the other costs on the right side of the ledger suggest that we should do so very sparingly. The lower the bar for making such forced transfers, the more we undermine our expectations in stability of possession, and the more we encourage and reward opportunism. This opportunism imposes costs both because of the efficiency losses that result from undercompensation and because the availability to would-be purchasers of liability-based relief from holdout encourages such purchasers to create (or fail to take steps to avoid) the kinds of holdout situations in which we have signaled readiness to intervene.

These considerations suggest why we only allow intervention in situations of possessory holdout by means of *ex ante* takings proceedings (i.e., eminent domain) rather than by *ex post* proceedings (i.e., a suit for damages), and why we permit the former to be initiated only by the state and only for a public purpose. The need to publicly justify a taking before it occurs reduces consequential losses, as it at least prevents owners from being caught by surprise by sudden loss of resources. While the state can certainly engage or collude in opportunism, its limited resources and need for collective decisionmaking should at least render it less enterprising in this regard than the universe of private actors would be if permitted. The public use requirement, to the extent that it is effectively implemented, provides some assurance that the projects for whose sake we override owners' idiosyncratic valuations will be ones that actually provide

significant benefits to the majority.⁴⁶

The administrative costs point in the same direction. Whether takings proceedings are *ex ante* or *ex post*, the costs of collective decisionmaking with regard to assessment, allocation and rulemaking will be incurred. The costs of making, promulgating and enforcing rules governing takings are likely to be somewhat smaller, however, when there is only one actor—the state—who may engage in them, as compared with a system in which any private actor may do so. Finally, the scope of self-help expenditures is likely to be much more restricted when owners need not fear that resources may be legally taken without notice by any private party.

B. Chattel accession.

Just as there are rare situations in which the perceived disparity between tangible efficiency gains and idiosyncratic value impel us to override the right to exclude, so are there situations in which a perception of radical disparity between the value of a resource and the owner's productive contribution to that value call for the same result. The law of chattel accession addresses such a situation. When one person takes a resource owned by another and increases its value dramatically through the application of productive effort (and perhaps addition of other resources), the law does not necessarily regard this added value as belonging to the original owner. Where the resource has been so altered that it cannot be disaggregated from the value added by the improver, and the majority of its present value is the result of the improver's efforts, equity will sometimes assign ownership to the improver and give the original owner damages (i.e., apply a liability rule) for the value of the property in its original state.⁴⁷

⁴⁶ *But see Kelo v. City of New London*, 545 U.S. 469 (2005) (upholding constitutionality of using eminent domain to transfer land from one private owner to another in order to further economic development).

⁴⁷ *See Weatherbee v. Green*, 22 Mich. 311, 320 (1871) (refusing to allow plaintiff landowner to recover hoops made from timber cut on his land). While this doctrine had traditionally been conceived in terms of whether the original property still existed *in specie*, Justice Cooley recognized that the key issue for purposes of equity was the relative contributions of the improver's labor and the original resource to the value of the new asset:

No test which satisfies the reason of the law can be applied in the adjustment of questions of title to chattels by accession, unless it keeps in view the circumstance of relative values. When we bear in mind the fact that what the law aims at is the accomplishment of substantial equity, we shall readily perceive that the fact of the value of the materials having been increased a hundred-fold, is of more importance in the adjustment than any chemical change or mechanical transformation, which, however radical, neither is expensive to the party making it, nor adds materially to the value. There may be complete changes with so little

Why do we have this rule? Strict adherence to the exclusion strategy in these cases would dictate that the improved resource (or any new resource indissolubly incorporating it in whole or part) would remain (or become) the property of the original owner, who would therefore be able to exercise the right to exclude against the improver and obtain the full exchange value of the improvement. The actions of the improver in indissolubly mixing her own labor and resources with the owner's property would simply give rise to another case of the general holdout scenario; B will have put herself in a position where her ability to reap the surplus created by her labor is held hostage to A's right to exclude. Indeed, Smith's analysis seems to suggest that this would be the preferable approach, as it is clearly the least costly rule to implement in terms of information costs. Without the doctrine of accession, a court need only identify the original owner and enforce his right to the resource (or whatever is left of it). Applying the governance rule of accession, on the other hand, requires a court to evaluate the relative contributions of the original resource and the improver's efforts to the present value of the resulting asset in order to award ownership. It also requires the court to put a specific number on the lesser of these two contributions, so that the party not obtaining title may obtain restitution. Clearly, the accession rule also undermines stability of possession and the expectations based on it, as owners may lose control of resources without their prior consent. We can only explain the law's acceptance of these information and efficiency costs by reference to the importance of our principle of distributive justice.⁴⁸

Why do we allow distributive justice to override the exclusion

improvement in value, that there could be no hardship in giving the owner of the original materials the improved article; but in the present case, where the defendant's labor--if he shall succeed in sustaining his offer of testimony--will appear to have given the timber in its present condition nearly all its value, all the grounds of equity exist which influence the courts in recognizing a change of title under any circumstances.

Id.; see also Earl. C. Arnold, *The Law of Accession of Personal Property*, 22 Colum. L. Rev. 103, 103-07 (1922).

⁴⁸ See *Weatherbee*, 1871 WL 2990 at *2 (to award all the value of the improved good to the original owner "is so opposed to all legal idea of justice and right and to the rules which regulate the recovery of damages generally, that if permitted by the law at all, it must stand out as an anomaly and must rest upon peculiar reasons."); Arnold at 106 (showing that even prior to Cooley's articulation of the comparative value theory, courts had recognized an exception to the owner's claim in "cases in which the accession of value to the raw material is so far beyond the original value, as to impress on the reason of mankind, the injustice of permitting the *bona fide* producer of that increased value to be deprived of it.") (quoting *Lampton's Executors v. Preston's Executors*, 1 J.J. Marsh. 455, 464 (Ky. 1829)).

strategy in cases of accession but not in most cases of holdout? One way to answer this question is to apply our earlier comparison of efficiency costs under exclusion and liability regimes. The first thing to notice is that in cases of accession, we are no longer much worried about protecting the owner's idiosyncratic or entrepreneurial value judgments with regard to the resource. Why? Because the *fait accompli* of the improver's transformative efforts has already irrevocably assigned a use to the resource, rendering moot whatever allocative preferences or plans the owner might have had. While there are still dynamic efficiency issues at stake in the way our system approaches cases like this, there is no longer an efficiency issue with regard to the allocation of this particular resource. As far as the use of that resource is concerned, all that remains is the question of distribution.

Of course, the dynamic efficiency issues are not to be glossed over. An unfettered ability to appropriate by accession would permit rampant opportunism, as takers set about helping themselves to resources by making transformative use of them, again undercompensating owners, radically undermining stability of possession, forcing courts to undertake allocation, and giving rise to increased expenditures on self-help. This is why the law of accession only permits *good faith* improvers to lay claim to the value of their improvements.⁴⁹ Only where the violation of the owner's right to exclude was unintentional can we afford to apply our sense of distributive justice to the results of the error, because only by limiting the use of liability rules to such cases do we restrain the threat of opportunism to acceptable levels. To be sure, a determination whether the improver acted in good faith is not costless or infallible, but it serves as a manageable threshold requirement to the application of liability rules, reducing greatly the number of instances in which we will have to incur collective allocation costs. And because, as we have already stated, it is generally not difficult to ascertain when one is coming into contact with the tangible property of another, the scope of cases in which defendants can credibly claim to have taken that property in good faith is likely to be very limited.

Smith provides another argument as to why we can afford our law of accession: As far as governance strategies go, it is relatively well-contained in its information requirements.⁵⁰ The court makes a once and for all determination as to ownership of the improved asset and requires a one time payment of compensation to the party who loses it. These determinations require only a rough valuation of the improved asset and of whichever input

⁴⁹ See *Weatherbee*, 1871 WL 2990 at *2 (“Where vicious motive or reckless disregard of right are not involved...”); Arnold at 108.

⁵⁰ See Smith, *supra* n. 13 at 1770 (describing the “high degree of modularity” promoted by the law of accession).

made a lesser contribution to its value.⁵¹ The fact remains, however, that the doctrine of chattel accession is an instance in which the common law has chosen to purchase distributive justice at the cost of efficiency.

V. AVOIDANCE COSTS IN NONPOSSESSORY USE CONFLICTS.

It is sometimes possible to interfere with the use of a resource without possessing or occupying it. This is the problem addressed by the law of nuisance, which deals with rival uses that elude the crude proxy of possession. One way to describe nuisance cases is that they involve a defendant who is merely attempting to use and enjoy her own property, but the manner in which she does so interferes indirectly with the plaintiff's use and enjoyment of his. Another way to describe this is that the defendant is in fact using the plaintiff's property in a way that conflicts with his desired uses. These two characterizations of the problem are economically equivalent, but sound very different on an intuitive level. We are more likely to sympathize with the defendant in the first description than in the second.

We can divide the universe of non-possessory uses into two categories. First are activities in which, although the defendant does not bodily possess or occupy the resource herself, she is responsible for the movement of some discrete identifiable physical object that does invade it in some way. Such objects would include a bullet, a rock, or the part of a building that overhangs adjacent property (thus invading its airspace). Invasions of this kind are generally treated the same as possessory uses; they are categorized as trespass and subjected to a strict exclusion standard.

The second category consists of activities that send no discrete invading objects but that nevertheless cause some physical alteration of the qualities of the affected resource. Examples include smoke, vibration, noise and smell.⁵² Legally, these types of non-possessory use fall into the category of nuisance.⁵³ A paradigmatic example of such a case is *Madison v. Ducktown Sulphur, Copper & Iron Co.*,⁵⁴ a suit brought by the owners of several small farms situated within a few miles of two plants for the reduction of copper ore.⁵⁵ The plants gave off large volumes of smoke that were destructive both to the farmers' crops and to the health of their

⁵¹ *See id.*

⁵² *See* Henry Smith, *Exclusion and Property Rules In The Law of Nuisance*, 90 VA. L.REV. 965, 999 (2004).

⁵³ Beyond this, one might define a further category of nuisance cases involving harms that do not stem from any physical alteration of the resource in question. *See* n. 65 and accompanying text.

⁵⁴ 83 S.W. 658 (Tenn. 1904).

⁵⁵ *Id.* at 659.

families.⁵⁶ In line with our first description of nuisance cases, the court found that the defendants were conducting their business in a lawful manner without any desire to harm the plaintiffs, and that they had made every effort to get rid of the offending smoke.⁵⁷ Noting the expenditure of \$200,000 in experiments to this end, the court concluded that it was not possible to abate the nuisance without stopping the plants' operations.⁵⁸ Despite this, our second description of the situation remains true as well: the defendants were effectively using the plaintiffs' farms as receptacles of airborne waste.

Why do we differentiate between nuisance and trespass at all? Why not simply use a strict exclusion strategy for both? Under such a rule, the plaintiffs in *Madison* would clearly be entitled to an injunction shutting down the copper plants. Indeed, they would be entitled to the injunction as soon as the smoke caused any perceptible alteration to their property, regardless of whether this damaged their crops, health, or anything else, just as one is entitled to an injunction and at least nominal damages anytime someone trespasses on his property, regardless of whether they damage it. The concern raised by such a maximally enforced right to exclude is that it would give landowners tremendous veto power over a wide range of uses of any neighboring land. While trespasses are usually avoidable by one not intending to make use of his neighbor's property, many beneficial uses of one's own property have unavoidable (or avoidable only at extreme expense) spillover effects that vary greatly in duration, magnitude and effect. There is a far weaker correlation between these effects and actual interference with others' uses of their property than there is between trespass and such interference, and as a result the former pose a less categorical threat to owners' expectations of stability in possession and use.

These considerations do not automatically defeat the case for strict exclusion. Remember that in choosing between an exclusion strategy and a governance strategy, we are choosing between two different sets of costs. The cost of a crude exclusionary proxy is the inefficiency caused when beneficial, non-conflicting uses are prevented by its application. The cost of a governance strategy is the inefficiency caused when less valuable conflicting uses are privileged, to which we must add the costs of collective allocation and the consequences of undermining property owners' stable expectations and raising compliance costs. In the context of nuisance, the costs of exclusion threaten to be fairly large. The costs on the other side depend ultimately on the kind of governance we introduce.

⁵⁶ *Id.* at 659-60.

⁵⁷ *See id.* at 660.

⁵⁸ *See id.*

A. The significant harm rule.

While the schema for deciding nuisance cases are various and contested, there is consensus on the basic threshold for actionability: the plaintiff must demonstrate an actual use conflict by making a showing of significant harm.⁵⁹ Only where such harm exists will the court recognize a spillover effect as a nuisance.⁶⁰ Furthermore, because the question whether there is significant harm must be decided collectively, it is necessarily decided under an objective standard.⁶¹ This requirement protects many beneficial uses that could be threatened by a rule giving people the absolute right to enjoin the odors of their neighbors' cooking and the sound of their dinner parties, but does so at the cost of sacrificing idiosyncratic values like the ability to fast in peace. As far as collective decisionmaking costs go, the significant harm requirement is fairly easy to administer, as it does not call for precise valuations of conflicting uses but only identification of some effect that would be considered a significant detriment under prevailing community standards. While this standard will inevitably call for case-by-case adjudication, it is fairly resistant to opportunistic manipulation by takers, whose ability to precisely calibrate the magnitude of their spillover effects is probably too limited to allow them to take systematic advantage of it. The standard should also enable owners to form reasonably stable expectations as to the kinds of harms from which they can expect protection.

While the significant harm requirement thus sounds like a reasonable step in the direction of governance, we must again keep in mind that from a strict efficiency perspective there is no way to know. The only empirical way to compare the owners' lost idiosyncratic value to that of the beneficial uses we have chosen collectively to protect as non-conflicting (because they cause no "significant harm") would be to enforce strict property rules and force people to bargain over them. This method of measurement has a built-in margin of error corresponding to the extent to which efficient transactions are torpedoed by strategic holdouts, which cannot be distinguished empirically from efficient refusals to sell. The choice between the two approaches thus cannot be made on quantitative

⁵⁹ See Restatement (Second) of Torts § 821F (liability for nuisance exists only to those to whom it causes significant harm).

⁶⁰ Think about what this means if analogized to the realm of possessory conflicts. It is as though A, in order to refuse to let B use his land or chattel (or to recover it from nonconsensual occupation), were required to make a showing that he was actually using it in such a way that B's use would be significantly harmful to him.

⁶¹ See Restatement (Second) of Torts § 821F (harm must be "of a kind that would be suffered by a normal person in the community or by property in normal condition and used for a normal purpose").

empirical grounds, but only by answering a qualitative value question: Which sort of error disturbs us more? The significant harm rule demonstrates that we are more disturbed by holdout than by failure to protect idiosyncratic uses of property that do not conform to prevailing community standards of normality.

B. Exclusion v. governance in identifying nuisances.

Having taken this step away from a pure exclusion regime, the question is whether we need to take any more. Should a finding of significant harm be sufficient to impose liability for nuisance?⁶² The writers of the Second Restatement of Torts think the answer is no, and have offered up a complex set of factors to be weighed in deciding when significant harms should be treated as nuisances.⁶³ The Restatement approach to nuisance cases goes a long way down the road of governance, calling for courts to engage in detailed evaluations of the comparative costs and benefits of the two conflicting uses in light of various values. Notably, the Restatement's definition of nuisance as a nontrespassory invasion of another's "interest in the private use and enjoyment of land"⁶⁴ leaves open the possibility of nuisances that do not physically alter the plaintiff's property in any way.⁶⁵ Smith points out, however, that in practice courts often hew to something much closer to an exclusion strategy than many theorists would like.⁶⁶ This is revealed in the persistence of locational reasoning in nuisance decisions, by which is meant reasoning that places great weight on the question whether spillover effects are in some way emanating *from* defendant's land to cause physical injury *to* plaintiff's land. If so, and if the harm is significant, then an exclusion strategy dictates that the defendant be found liable. Such locational reasoning is irrelevant to Coase, who refuses to regard either of two conflicting uses as either "injurer" or "victim," and wants only to ensure that the sum of value they create is maximized. Smith argues that this use of locational reasoning in determining initial use entitlements is justified because of the same kinds of

⁶² Note that this is a question separate from that as to whether liability should result in application of a liability or a property rule.

⁶³ See Restatement (Second) of Torts, §§ 822-831 (laying out various lists of multiple factors to be weighed in determining the gravity of the harm, the utility of the use, whether one outweighs the other, whether this renders the use unreasonable, whether the invasion is intentional, and whether all these things put together result in an actionable nuisance).

⁶⁴ Restatement (Second) of Torts §821D.

⁶⁵ A few courts, for example, have found aesthetic nuisance. See Smith, *supra* n. 52, 999 n.103 (2004) (providing examples).

⁶⁶ *Id.* at 998-1000.

information costs discussed in connection with possessory uses.⁶⁷

To see Smith's point clearly, let us compare the information costs involved in avoiding conflicting possessory uses with those involved in avoiding conflicting non-possessory ones. It is relatively easy to predict in advance the extent to which one will need to make possessory use of resources controlled by others in order to bring a project to fruition, and to identify the resources one will need. Our hypothetical railroad investors, for example, could not credibly claim that only after laying all the rest of the track did their need for A's parcel of land become evident. It is even easier to identify in advance those actions that will infringe upon the possessory rights of others—there is no ambiguity about whether or not proceeding to lay the track without permission would infringe A's rights.

Under the Restatement approach to nuisance on the other hand, while it will often be possible to predict that certain activities are likely to give rise to nuisance, whether or not actionable nuisances actually arise will always be contingent upon the relative values of the uses, present or subsequent, made of nearby land by other persons beyond one's control. The existence of a conflict may not be apparent at first; the nuisance may begin as an imperceptible encroachment and come to be perceived as an invasion only after one or the other of the conflicting uses reaches a certain level of intensity, which may not be until after the defendant's use has continued for some time and become economically entrenched. Or there may in fact be no conflict until the affected land changes hands, and the new owner makes different use of it. It is thus much more difficult for a land owner to avoid the risk that, having committed resources to some productive activity, she will find herself embroiled in a nuisance dispute. The facts of *Madison* illustrate the problem. While the court does not treat the question "who came first" as having any importance, it appears that there had actually been a copper mine in the area first, but that mining operations had been discontinued during the period when the farms were acquired. *See* 83 S.W. at 659-60. Once operations were resumed, it was many years before the new residents brought suit, during which time the plants took on the fundamental economic role in the local community described by the court.⁶⁸

The locational approach to nuisance cases identified by Smith reduces, though it does not eliminate, the difficulty of complying with one's duty to avoid non-possessory use conflicts. A landowner seeking to make

⁶⁷ *Id.* at 1000-07.

⁶⁸ Indeed, the court found that the request for injunctive relief against one of the two defendants was barred by laches. *See id.* at 664. This did not, however, stop the court from describing the consequences of an injunction as though it would result in both plants being shut down. *See id.* at 661.

use of her land still cannot know for sure which spillover effects will interfere with her neighbors' preferred uses of their land, but she can at least narrow down the list of activities giving rise to potential liability to those likely to manifest themselves physically on the property of others. It is relatively easy to determine whether one is engaging in such an activity, because one generally has to be chronically generating some intense physical phenomenon (such as odor, smoke, vibration, or temperature) in order for it to have this kind of effect on neighboring lands. Thus it at least remains possible for a landowner to foresee and manage the risk of liability associated with productive investments by focusing solely on the nature of her own activities, and seeking to minimize her physical spillovers. As compared with Restatement nuisance doctrine, the locational approach greatly reduces the costs of allocation, compliance, and enforcement.

C. Accession of nonpossessory uses: Epstein's Rule

Even if we are to adopt the locational approach to identifying nuisance, there remains the question whether the right to be free of nuisances should be protected by a liability or a property rule. In *Madison*, rather than grant an injunction that would have shut down an industry of great economic importance to the area, the court held that the plaintiffs were entitled to damages alone.⁶⁹ In reaching its result, the court did not deny that the injury to the farmers would qualify as "irreparable harm" or discuss the adequacy of money damages to compensate people for the loss of homes in which they had lived for over twenty years.⁷⁰ Rather, it based its decision on a "consideration of all of the special circumstances of each case, and the situation and surroundings of the parties, with a view to effect the ends of justice." The combined value of the two plants was nearly \$2,000,000, and an injunction shutting them down would render the property "practically worthless" and drive the defendants from the state.⁷¹ On the other side, the farms were all on "thin mountain lands, of little agricultural value"⁷² and the aggregate value of the tracts was less than \$1,000.⁷³

This vast difference in the market values of the conflicting uses leads Epstein to approve the result in *Madison*, characterizing it as a case where "even the most modest dollop of property protection could be

⁶⁹ *Id.* at 666-67.

⁷⁰ *See* 83 S.W. at 660 (complainant had lived on and cultivated his farm for 20 or more years).

⁷¹ *Id.* at 660, 666.

⁷² 83 S.W. at 659.

⁷³ *Id.* at 666.

regarded as excessive.”⁷⁴ Why? Because “[i]t does not take a Ph.D. in economics to see the holdout danger” implicit in such a case.⁷⁵ Epstein states that the appropriate solution to such cases is “to allow injunctive relief when the relative balance of convenience is anything close to equal, but to deny it (in its entirety if necessary) when the balance of convenience runs strongly in favor of the defendant.”⁷⁶ This rule of thumb (we shall call it “Epstein’s Rule”)⁷⁷ has a number of implications that need unpacking.

First, is the “relative balance of convenience” to be determined on the basis of nothing more than the relative market values of the two conflicting uses of plaintiffs’ land? If so, we are throwing both idiosyncratic and entrepreneurial value out the window from the get go. If the plaintiffs subjectively value their farms at more than \$2,000,000, or if they have in mind future uses of the land that will be worth more than that (but will be harmed or prevented by the pollution), then applying Epstein’s Rule leads to an inefficient result. Again, we have no empirical means by which to compare these efficiency losses to those Epstein fears from strategic holdout. We might interpret a balance of convenience that runs “strongly” in favor of the defendant to mean a gap so large that we cannot imagine it being closed by any subjective valuation that we are willing to regard as plausible, but in that case we have jettisoned the subjective theory of value and are no longer engaging in economic analysis.

Even leaving idiosyncratic damages aside moreover, Epstein’s Law tells us that any rule calling on us to preempt the perceived risk of holdout will result in systematic undercompensation of plaintiffs, one of the most important components of which will be the uncaptured consequential damages—not merely to the particular owner expropriated but to owners at large—of undermining stable expectations about the ability to use resources in one’s control. If prior to commencing operations the copper plants had attempted to purchase the farmers’ land, and the farmers had refused, presumably Epstein would object to allowing the copper plants simply to take possession of the land subject to a liability rule, even if the plants’ intended use of the land were believed to have a much higher market value than the farms. Why then is he willing to allow the plants to take the right to use the land physically (albeit non-possessorily) through the backdoor means of making a lot of money by doing so? Doesn’t this form of taking open the door to rampant opportunism, making Epstein’s Rule run afoul of Epstein’s Law?

Epstein’s Rule bears comparison to the doctrine of accession. In

⁷⁴ Epstein, *supra* n. 11 at 2102.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ Not, of course, to be confused with Epstein’s Law.

both scenarios, we have a defendant who has made rival use of someone else's property to produce a significant surplus, and the question is whether she or the original owner should be entitled to the value of that surplus. The difference is that unlike accession, in which a chattel has been irreversibly transformed, in nuisance the taken property can generally be returned to the owner in something near its original state by discontinuing the offending activity. Thus the futility of seeking to protect idiosyncratic and entrepreneurial value that helped pave the way for accession doctrine is absent here. On the other hand, nuisance is also unlike chattel accession in another way: whereas strict enforcement of the chattel owner's property rights would simply transfer possession of the improved chattel and all of its value to him, forcing the nuisance to shut down destroys any value generated by it. A court asked to enjoin a nuisance whose value apparently outweighs that of the harm is being asked not simply to redistribute value, but to destroy it. This may make liability look like a more attractive option, at least if the inefficient dynamic consequences of relaxing property rules can be cabined.

1. The good faith requirement in nuisance.

This brings us to the question of good faith. We have seen that in the context of accession, avoidance of opportunism calls for a rule requiring that when the defendant took and transformed the resource, she reasonably believed that she was not violating anyone's property rights. Such a belief might come, for example, from a reasonable but mistaken perception that the resource was unowned, or that it had been transferred or licensed to her. In the context of nuisance, good faith might analogously be understood to mean that when the defendant invested in the practices giving rise to the nuisance, she had a reasonable but mistaken belief that there would be no significant or harmful spillover effects. This was not the case in *Madison*, however. Instead, the court found that the defendants were conducting their business in a lawful manner without any *desire* to harm the plaintiffs, and that they had tried to get rid of the smoke, but could not without stopping the plants' operations.⁷⁸ Thus, the only form of good faith Epstein's Rule requires is that the nuisance be an unavoidable side effect of the surplus-producing activity. All a taker has to do to be eligible (so far as intent goes) for application of the liability standard is focus on minimizing the spillover effects resulting from her own legitimate productive activities. Ex ante knowledge that there will be some unavoidable level of spillover effects does not put her in bad faith. On both counts, then, Epstein's Rule for non-

⁷⁸ See 83 S.W. at 660.

possessory holdout is a far less guarded departure from strict property rules than is the doctrine of chattel accession.

2. Opportunism and ex ante avoidance costs.

One way to justify Epstein's readiness to relax property rule protection in extreme cases of non-possessory holdout is to notice that in this realm the risk of opportunism by takers wielding liability rules is much more evenly counterbalanced by that of opportunism by owners wielding property rules. To deliberately engineer a position of possessory holdout, A needs to accurately predict B's future need for some unique physical resource that B has not yet acquired. To engineer a position of non-possessory holdout, A need merely purchase land in the vicinity of some existing lucrative enterprise that creates spillover effects. It is true that B can seek to preempt such opportunism by purchasing, or negotiating equitable covenants over, any parcels foreseeably affected, and Smith parts ways with Epstein by suggesting that we should incentivize her to do so through refusal after the fact to defuse holdout with liability rules.⁷⁹ Who is right?

I have argued above that the ability to accurately identify non-possessory use conflicts in advance is subject to much greater uncertainty than is the ability to accurately identify the future need for possessory use of resources. This uncertainty is of two dimensions: that regarding the precise incidence and magnitude of future spillover effects, and that regarding the future uses of neighboring land. To this we must add a third type of uncertainty: that regarding the outcome of any future nuisance action should the two conflict. To decide what rights she needs to purchase ex ante, someone wishing to make productive use of her land needs to prognosticate on all three fronts. If her predictions on any one of the three are incorrect, much of the money spent purchasing rights (as well as the transaction costs incurred in doing so) will be wasted, whether because she has purchased rights that do not sufficiently protect her activities from holdout, or because she has purchased rights that she could have done without. The only sure way to avoid nuisance ex ante, thus sparing us the costs of public allocation proceedings, is to avoid any activities likely to create spillover effects, which would drastically reduce the number of productive uses to which land can be put.

We have also noted that in the case of possessory holdout, it is likely wasteful to proceed making productive investments without first obtaining rights to a needed resource, both because such investments do not generate

⁷⁹ Smith, *supra* n. 52 at 1041-45.

information as to which use has higher value, and because the investments themselves are wasted if the resource is ultimately allocated elsewhere. The nuisance scenario looks rather different in this regard. First of all, proceeding to engage in productive nuisance-creating activities *does* generate information useful to gauging the relative value of those activities. Unlike possessory use conflicts, non-possessory use conflicts are (at least in many cases) neither immediately manifest nor absolutely exclusive, often permitting both uses to proceed simultaneously for some time until the conflict becomes manifest. Even after that point, the two uses may proceed simultaneously for some time even though one is being progressively harmed by the other. It is this fact that makes possible the very comparison of market values on which Epstein's Rule relies. Also, in contrast to foreseeable possessory conflicts which can be assumed to be absolutely exclusive, proceeding with a potentially nuisance-creating activity may be the only way to ascertain whether and to what extent it actually gives rise to significant use conflicts. Thus in gauging the information costs of failing to secure rights to non-possessory uses *ex ante*, we must consider the possibility that they are offset by information useful to allocation that is generated by proceeding with the offending use. If we apply the single owner test at a point in time prior to any final allocation decision, we might well expect that in many cases such an owner would proceed in just this way, experimenting simultaneously with potentially conflicting uses to determine their relative value and practical compatibility. Thus, holding people strictly liable for their failure to avoid nuisance liability through *ex ante* negotiation may not be worth it.

Despite the absence of a strict requirement that the taking of a non-possessory use be unintentional, the scope for opportunistic taking of use rights under Epstein's Rule may be smaller than it would appear. In order to take advantage of Epstein's Rule, a taker has to make productive investments that actually generate (as opposed to merely promising, as in possessory holdout) a surplus vastly exceeding the value of the conflicting uses to which A is putting his land. If A is vigilant, he can probably stop her from reaching this point by suing as soon as the threshold of significant harm is reached. Epstein's Rule can thus be construed as a form of laches: if you allow a non-possessory use to continue until the demonstrable value of the defendant's uses vastly outweighs that of your own, you lose protection of your idiosyncratic and entrepreneurial value.

Epstein explains his rule as intended to prevent inefficiency that could result from allowing useful transactions to be blocked by strategic behavior.⁸⁰ Since we have no way of knowing how much idiosyncratic and

⁸⁰ Epstein, *supra* n. 11 at 2094.

entrepreneurial value are sacrificed however, the claim that this rule is more efficient cannot be substantiated by either empirical measurement or economic reasoning. We might just as well explain the rule as serving to prevent distributive injustice that could result from allowing neighbors to use their right to exclude as a sword to extract efficient holdout premiums from the productive efforts of others. Limiting the use of injunctions to cases where there is a relatively narrow gap in market value between the two conflicting uses reduces the risk of failed negotiations, but it also reduces the risk of successful ones in which holdout power leads to unjust transfers. Either reading is consistent with the normative idea that the right to exclude ought to be used only to shield one's own present or future productive uses of a resource from interference. We do not generally enforce this norm strongly, because it is too costly to second-guess each instance in which the right is asserted. But the nuisance cases subject to Epstein's Rule constitute a category in which the cost of second-guessing is lowered by several factors: 1) the risk of opportunism by takers is limited by the need to generate a large relative surplus before one's nuisance gives rise to suit; 2) it is not clear that refraining from non-possessory uses entirely until one has negotiated rights for those uses is either feasible or desirable; 3) enforcing strict property rules would destroy value rather than merely redistribute it.

VI. AVOIDANCE COSTS IN INTELLECTUAL PROPERTY

How well do the arguments for exclusion in tangible property transfer to the realm of IP? Smith argues that the "things" that are objects of the right to exclude in intellectual property law are not fundamentally more difficult to delineate than are those prevailing in property generally.⁸¹ His first example is a patent covering a mechanical apparatus, which is a physical thing, and thus has boundaries like any other physical thing. From there we can move to patentable "things" that are somewhat less concrete, such as chemical compounds, and finally on to industrial processes and business methods, which are not things at all but lists of uses.⁸² Smith acknowledges, with regard to these latter types of patents, that there is an "ever-present danger that claims will describe the goals of a process while leaving too much vagueness in the description of the actual process being claimed."⁸³ Smith terms this an issue of "substantive breadth"—i.e., the scope of the "thing" being treated as property—and contrasts it with the issue of "functional breadth"—i.e., the number of ways of interacting with

⁸¹ Smith, *supra* n. 13 at 1795.

⁸² *See id.*

⁸³ *Id.* at 1796.

that “thing” that the owner is given the right to prohibit. Smith suggests that while there may be valid concern about substantive breadth with regard to certain types of patents, the functional breadth of patent law is justified on the ground that it reduces information costs in allocation and rulemaking, preventing courts from needing to evaluate uses or relative deservingness of owners and infringers.⁸⁴

I argue that Smith’s discussion understates the extent to which an exclusion regime in intellectual property not only differs from, but is in direct conflict with the underlying exclusion regime we use for tangible resources. This is because any system of intellectual property rights amounts in practice to a governance regime of use rights to tangible resources, one that imposes all the same costs Smith identified in his analysis of governance regimes generally. In evaluating the choice between exclusion and governance in the IP realm, we have to consider the possibility that by accepting certain governance costs on the IP plane, we may ameliorate some of the disruption caused by IP on the tangible plane.

A. *IP and numerus clausus.*

Take even the simplest of Smith’s examples: a patented mechanical apparatus. Even though the patent claims describe a physical object (or to be more precise, a class of physical objects having functions and characteristics that fall within given parameters), the right to exclude conferred by the patent does not pertain to any such actual corresponding object. To avoid infringing a patent, it is not sufficient (or even helpful) to avoid appropriating or coming into contact with any particular physical objects, whether possessed by the patent owner or anyone else. This means that however “concrete” the conceptual “boundaries” delineated in a patent may be, those boundaries do not, as in the case of tangible property, serve as crude proxies that obviate the need to identify and evaluate specific potential uses of physical resources in order to comply with the property rights of others. To the contrary, it is only through extremely detailed evaluation of uses that anyone can determine whether or not his actions transgress the “boundaries.”⁸⁵ This is no less true of the patented machine than it is of the business method patent. In either case, the owner’s patent rights reach into the indefinite bundle of use privileges that are supposed to be delegated to owners of tangible assets under an exclusion regime, replacing some of them with duties *not* to use one’s own property in certain defined ways.

⁸⁴ *Id.*

⁸⁵ See James Bessen & Michael Muerer, PATENT FAILURE (2008) 46-72 (discussing the difficulty of discerning patent boundaries).

Indeed, when translated into their practical effects on the tangible property rights of others, intellectual property rights can be seen to constitute a radical departure from the traditional principle of *numerus clausus*.⁸⁶ IP rights amount to a form of negative easement—a restriction on the uses to which owners of tangible property can put it.⁸⁷ They violate, however, several traditional limitations on such servitudes. At common law, only a few specific types of activity could be restricted by the use of a negative easement: conduct that blocked the flow of light, air, or water in an artificial stream, or conduct that denied support to buildings or structures.⁸⁸ These limitations served to protect a specific tract of adjacent property, making negative easements by nature appurtenant.⁸⁹ For the most part, the common law’s refusal to enforce negative easements in gross against subsequent owners of land has survived to the present day, and while the Third Restatement of Property abandons this restriction, the recent (and sharply limited) innovation of conservation easements generally required specific legislation to make them enforceable.⁹⁰ IP rights are negative easements in gross that are not limited to real property, can be used to restrict an extremely broad range of uses, and once acquired, make servient estates of every chattel and every person within the territorial reach of the law. These rights are freely transferable, and there is no requirement that the person initially acquiring them stand in any sort of privity to the tangible property burdened, or that the interests protected in any way “touch and concern” that property.

⁸⁶ See generally, Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000).

⁸⁷ See Jon W. Bruce & James W. Ely, Jr., *The Law of Easements and Licenses in Land* (2001), §2:10 (“[A] negative easement enables the holder to prevent the owner of the servient estate from doing things the owner would otherwise be entitled to do.”).

⁸⁸ See Susan F. French, *Toward a Modern Law of Servitudes: Reweaving the Ancient Strands*, 55 S. CAL. L. REV. 1261, 1267 (1981).

⁸⁹ See Bruce, *supra* note 87 at §2:10 (“A negative easement always enhances the enjoyment of a dominant estate and is thus necessarily appurtenant.”).

⁹⁰ See generally Restatement (Third) of Property, Servitudes § 1.6 cmt. a.(2000) (describing uncertainty and difficulties of creating enforceable conservation easements under traditional common law rules, which led to widespread enactment of statutes and in 1981 the promulgation of the Uniform Conservation Easement Act); *id.* § 2.6 cmt. a (“Early law prohibited the creation of servitude benefits in gross and the creation of servitude benefits in persons who were not immediate parties to the transaction.”); Jesse Dukeminier & James E. Krier, *Property* 855-57 (5th ed. 2002) (outlining history of restrictions on negative easements in England that were then adopted by U.S. courts); Powell on Real Property § 91.01[2] (Michael Allan Wolf ed., Matthew Bender 2005) (1949) § 32.10[B] (detailing evolution of juristic attitudes toward transfer of easements in gross); John L. Hollingshead, *Conservation Easements: A Flexible Tool for Land Preservation*, 3 ENVTL. LAW. 319, 327 (1997) (where the benefit of an easement is held in gross, some courts do not allow the burden to run with the land).

Smith and Merrill have argued that the *numerus clausus* principle is important from an economic perspective because proliferation of property forms makes it costly for others to ascertain the legal dimensions of property rights, which they must do in order to avoid violating those of others.⁹¹ They recognize that this principle is at its “weakest” in the area of intellectual property, but attribute this weakness solely to the common law’s occasional innovation in creating new doctrines such as misappropriation or right of publicity.⁹² So far as patent or copyright law is concerned, Smith treats the statutory enumeration of limited lists of exclusive rights⁹³ as substantially satisfying the *numerus clausus* principle.⁹⁴ The statutory admonition not to “make[], use[], offer[] to sell, or sell” a patented invention would indeed be quite straightforward if that invention were a tangible object that one could simply avoid contact with. In practice, however, to determine whether one is making or using the invention claimed in even a single patent may involve the parsing of scores—or in some cases, hundreds—of complex claims, and the total number of issued patents currently in force is roughly 1.8 million.⁹⁵ The type of search required to identify all the use restrictions to which one’s property is subjected by patent law is far more costly and subject to error than a title search in a land register,⁹⁶ and indeed is far more open-ended given that the search cannot be limited to rights affecting a specific piece of land or chattel.⁹⁷

One might argue that the information costs involved in intellectual property are smaller, precisely because the duties it imposes apply to all personal property equally, whereas the problem created by innovative forms

⁹¹ Merrill & Smith, *supra* note 43.

⁹² *Id.* at 19-20.

⁹³ See 35 U.S.C. §271 (prohibiting one to “make[], use[], offer[] to sell, or sell[]” a patented invention without authorization); 17 U.S.C. § 106 (granting copyright holders exclusive rights to reproduce, prepare derivative works based on, distribute copies of, and with respect to some kinds of work, to perform or display the copyrighted work).

⁹⁴ Smith, *supra* n. 13 at 1780 & n.123.

⁹⁵ This rough calculation is based on information from the U.S. Patent Office concerning the numbers of patents issued per year from 1991-2007, see U.S. Patent Statistics Chart: Calendar Years 1963 - 2007, available at http://www.uspto.gov/go/taf/us_stat.htm, and assumes that maintenance fees on patents of various ages are paid the same percentage of the time that they were in 1998, see Mark Lemley, Rational Ignorance at the Patent Office, 95 Northwestern U. L. Rev. 1492, 1504 (2001).

⁹⁶ See Bessen & Meurer, *supra* n. 85 at 51-68 (comparing the difficulty of running a land title search with that of running a patent search). *Cf.* Merrill & Smith at 44-45 (arguing that notice of idiosyncratic property rights, even if given through a centralized register, is insufficient to restrict the information costs on third parties to justifiable levels).

⁹⁷ See Bessen & Meurer at 68-71 (discussing the “patent flood” and the fact that firms are often sued on patents covering apparently distant technologies).

of property is that of distinguishing between chattels that can be purchased in fee simple and those that may be subject to some fanciful servitude.⁹⁸ In addition, intellectual property is of limited duration, whereas ordinary property rights continue in force until terminated by someone having power to do so. While these factors differentiate the information costs imposed by intellectual property from those caused by proliferation in the forms of tangible property rights, they do not support a conclusion that the former are less burdensome. Assuming a recording requirement, purchasers of land and chattels could assure themselves once at the time of purchase as to the universe of idiosyncratic limitations on their use and transfer rights, as they would take title free of any limitations not recorded. With intellectual property on the other hand, owners of tangible property must incur search costs anew every time they contemplate a new use, both because there are far too many use restrictions in effect to process them all at once, and because the scope of these restrictions is in constant flux as old IP rights expire and new ones are created, all without notice to the people whose property is affected.⁹⁹

B. Undercompensation in the acquisition of IP rights

Once we conceptualize intellectual property as a governance regime delegating use rights to tangible resources, we see the process of obtaining a patent as a form of liability proceeding whereby the patentee pays a collectively determined price in order to effect a (temporally limited) taking of use privileges from the public at large.¹⁰⁰ Does Epstein's Law apply to this liability regime? The price paid by the patentee consists of the disclosure of information.¹⁰¹ The patent applicant describes the scope of the use privileges she wishes to appropriate, and the Patent Office determines in the first instance whether the information offered in exchange for these privileges is sufficiently valuable to compensate the public for the appropriation. This determination is guided by the requirements of novelty,

⁹⁸ See Merrill & Smith at 27-33 (discussing problems that would be raised by, for example, creating a time-share in a watch).

⁹⁹ See Bessen & Meurer at 68-71.

¹⁰⁰ Again, a patentee is appropriating use *privileges* from their prior owners, which then vest in her in the form of use *rights*—i.e., the right to exclude others from these uses. Though the patentee has taken away everyone else's privilege to use the patented invention, she is left with only a right to exclude and may not have the privilege to use it herself.

¹⁰¹ See 35 U.S.C. §112 (requiring that patent applicant provide a written description of the invention sufficient to allow one skilled in the art to make and use it, as well as a description of the best mode for carrying out the invention contemplated by the inventor).

utility, enablement, obviousness, etc.¹⁰² According to Smith's analysis, we should expect undercompensation primarily in cases where takers are better informed as to potential uses than public decisionmakers, but less informed than current owners.¹⁰³ Here, the current owners consist of the public at large, so the adequacy of the compensation must be evaluated with respect to various subclasses of the public, each of which will value the disclosed information and taken use privileges differently.

With regard to any given claimed invention, it is probably the case that most people have little direct interest in either the use privileges at issue or the information disclosed. For these owners of use privileges, the question whether they have received adequate compensation collapses to the overall question whether the patent system is efficient as a whole—i.e., whether the value conferred on the public by inventions that would not have been made or disclosed in the absence of patent protection outweighs the increase in prices that results from restricting competition and from the sheer cost of enforcing and complying with IP laws.

For those members of the public who are actually interested in and capable of exercising the use privileges at issue, the question is whether the information disclosed in the patent application significantly enhances their ability to do so. We can posit one subclass of privilege owners who, had the patentee's disclosure not brought the invention to their attention, would not otherwise have discovered it during the patent period. These owners receive adequate compensation, as the practical value of the use privileges taken from them by the patentee would be zero if not for the disclosure of the information. Now they know of the invention's existence, can bargain for rights to use it during the patent term, and will be able to do so freely after it ends. We can posit another subclass of owners, however, who did discover the invention on their own.¹⁰⁴ To these owners, the information contained in the patent disclosure is probably worthless, while the use rights they have lost are valuable, leading to systematic undercompensation.¹⁰⁵ In between is a third subclass of owners who would have discovered the invention on their own within the patent period. For these owners, the relative values of the disclosed information and the use privileges depends on how much research and development effort they are saved by the former and the purpose to which they intend to put the latter. It also depends,

¹⁰² See 35 U.S.C. §§ 102, 103, 112.

¹⁰³ Smith, *supra* n. 11 at 1781-83.

¹⁰⁴ As for example, someone who discovered the invention independently of but after the patentee, but did not put the invention to public use more than a year before the filing of the patentee's application. See 35 U.S.C. § 102(a),(b) (such independent discovery and use would not invalidate patent).

¹⁰⁵ Such owners are also likely to place a high idiosyncratic value on the use rights lost, as people are wont to do with things they feel they have created themselves.

crucially, on the extent to and price at which the use privileges, once ceded, will be made available to them. If these owners' use privileges were protected by a property rule, they would agree to cede them only if guaranteed a license to use them for their intended purposes at a price lower than the cost of developing the invention themselves. The members of this group who ultimately obtain licenses on such terms thus receive adequate compensation for their taken use privileges, while those who do not—particularly those not granted any license at all—are undercompensated.

Note that we can characterize much of the undercompensation to these privilege holders as lost entrepreneurial value. At the time the taking is initiated (i.e., the filing of the patent application), the privilege holder who is already working on the same or a similar invention has reason to believe that his use privileges will have more value in the future (i.e., when he completes development of the invention) than they do now. By filing a patent application, the applicant forces the Patent Office to evaluate the quality of the information she is offering now, without benefit of the information that would be generated by allowing the privilege holder to complete his development process. In turn, the most important proxies used by the Patent Office to determine the value of the applicant's disclosure—novelty, enablement, and obviousness—are each matters concerning which the applicant is likely to have better information than the Patent Office, though she may not have better information than the class of interested privilege owners who are at risk of undercompensation. The Patent Act further increases the likelihood of undercompensation by calling for obviousness of an invention to be evaluated “at the time the invention was made.”¹⁰⁶ Given that the only compensation offered by the patent applicant in exchange for her taking consists of information, the value of that information should ideally be determined as of the time the exchange is made, as it may well have diminished in value since it was first generated. This provision is similar in effect to a compensation statute allowing a taker to pay compensation in present day dollars, but calculated as though the dollars had the same value as at some point in the past.¹⁰⁷

The taking of use privileges to owners' assets through patent applications is not as radically disruptive to expectation stability as would be a regime allowing possessory appropriation of those assets. Still, it is very disruptive to those privilege owners who have their own plans to exercise the privileges at issue. To avoid this, they will engage in the only

¹⁰⁶ 35 U.S.C. § 103(a).

¹⁰⁷ The reason we do this may be a valid one: we want to afford inventors space within which to prepare a patent application, and not force them to keep the invention secret while doing so. Nevertheless, the effect on the value of what is offered to the public in exchange for patent rights is as described.

avenue of self help available to them: the filing of preemptive patent applications of their own, both to prevent others from taking use privileges they wish to exercise and to obtain retaliatory rights to other use privileges that can be used as leverage in cross-licensing negotiations. This dynamic leads to both an increase in the number of takings initiated and a deterioration in the quality of the information offered as compensation, each of which increases the cost of collectively allocating use privileges.

C. The accession rule applied to patent law.

In his recent article applying his work on exclusion and governance to intellectual property, Smith analogizes the acquisition of intellectual property rights to the doctrine of accession.¹⁰⁸ In his analogy, the resource appropriated by the improver consists of “either information in the public domain or the option in the public to invent and use what the inventor has invented.”¹⁰⁹ Having mixed her labor (and other rival inputs) with this substratum, the inventor creates a useful work which intellectual property law then allows her to take title to. The analogy is an uneasy one. The key factor in accession doctrine is that the property taken has been indissolubly mixed with the improver’s labor, so that it is impossible simply to return it and put the owner back in his original position without destroying the value created by the improver. The actions of an inventor do not consume information or public use privileges in this way; to the contrary, it requires the extraordinary intervention of intellectual property law to *prevent* the public from being left in possession of its original privileges. Indeed, the act of creation itself does not impinge on those privileges at all, any more than beautifying one’s house involves appropriation of the neighboring parcels whose value is enhanced.

It is tempting to defend the accession analogy by reasoning that the inventor’s labor *has* become indissolubly mixed with the public’s use privileges, in that those privileges are irrevocably enhanced in value by the inventor’s efforts. Here we must proceed with caution, however. If anything enhances the public’s use privileges, it is not the act of invention itself, but the disclosure of information enabling others to make use of them. In chattel accession, the enhanced value of the taken property is a *fait accompli* prior to the payment of any compensation. Here however, Smith treats the disclosure of information as the compensation, not as the act giving rise to the accession problem in the first place.¹¹⁰ This elision masks another option available to the inventor: she can keep the information to

¹⁰⁸ Smith, *supra* n. 13 at 1766-77.

¹⁰⁹ *Id.* at 1771.

¹¹⁰ Smith, *supra* n. 13 at 1771.

herself, just as the homeowner can build her own wall if she wishes to forestall the gratuitous aesthetic enrichment of neighbors. Like the homeowner—and *unlike* the polluting factory—the inventor has no need to appropriate anyone else’s use privileges (i.e., violate their rights to exclude) in order to enjoy the direct benefits of her labor. To the extent that she has also bestowed benefits on others, the applicable default accession rule would be that for accession to land, in which unauthorized improvements simply become the property of the landowner.¹¹¹ This result is in fact less harsh to the inventor than to the unlucky improver of someone else’s land, for while the public is free to enjoy the enhanced value of their use privileges, they obtain no right to exclude the inventor from doing the same, and hence wield no holdout power over her.

Despite his detailed discussion of accession doctrine and its modular qualities, Smith does not discuss whether this same body of doctrine might be used to provide limits on the patent owner’s right to exclude. Though accession is problematic as an analogy for the original acquisition of intellectual property rights, it bears obvious similarity to the problem of the infringing improver at issue in *eBay*. Here we have an improver who, by taking a patented invention and investing rival inputs of her own, has created a surplus of value. As with nuisance, the analogy is imperfect because nothing prevents the return of the owner’s property in its original form. To do so, the improver would merely have to stop engaging in the uses of her tangible property that are covered by the patent. Also like nuisance, termination of the infringing use will destroy the value created by the improver.

Let us take the example used by Lemley and Weiser of a complex product containing an infringing component.¹¹² Say B designs and builds a computer that contains a single chip found to infringe A’s patent. The first question is in what sense this chip is indissolubly mixed with B’s computer. There are two possibilities: either the computer’s design is such that no noninfringing chip would allow it to function, or else a noninfringing chip could be used, but irreversible investments make it a practical impossibility to substitute a different chip in time to realize the surplus. Either way, if B is enjoined from making or selling her product as is, a significant amount of value will be destroyed and investment wasted.

To apply the accession rule we need to determine the relative contributions of the patented invention and the improver’s rival inputs to the value of the overall product at issue. This is an extremely difficult problem, given that there are probably many components that are each in their own

¹¹¹ See, e.g., *Buswell v. Hadfield*, 202 Ark. 200, 203, 149 S.W.2d 555, 557 (1941) (true owner of land entitled to improvements made to that land by mistaken possessor).

¹¹² See Lemley & Weiser, *supra* n. 26 at 797-800.

right but-for causes of the product's functioning at all. If the problem is posed as one of taking the value of the complete product and attempting to allocate it among the various components according to how much of that value is contributed by each, then in many cases it may be simply unsolvable.¹¹³ Of course, the same is true even in the realm of normal chattel accession. We do not determine the relative contribution of the appropriated timber to the barrel hoops by looking at the hoops and attempting to gauge how much of their present utility derives from the material of which they are made. Instead we subtract the value of the timber in its original form from that of the finished hoops, attributing what is left to the improver's input.¹¹⁴ We can do this in chattel accession cases because the appropriated chattel tends to be something fungible for which there is a readily determined market price.¹¹⁵ The problem in patent cases is that a patented invention is generally *not* a fungible commodity, both because it had to have some novel characteristics in order to be patented, and because it cannot be freely manufactured and sold by all and sundry. Moreover, unlike tangible resources that are generally sold *in toto* by means of transferring possession (and all potential use rights), intellectual property is usually licensed on a use-by-use basis. The number of directly comparable transactions in which the same patent was licensed for the same (or even a very similar) use may therefore be too small, and the transactions too idiosyncratic,¹¹⁶ to permit any meaningful conclusion as to the "market value" of the use B is making of it. If this is the case, and the infringing product's design is such that no substituted noninfringing component could enable it to function, then we have no reliable basis on which to evaluate the relative contribution of the infringing component to the product's value. In such cases enforcing the property rule appears to be the only viable choice.

If a noninfringing chip *would* allow the product to function on the other hand, then there may be a wider market for chips having the characteristics required by the product, and it may be possible to determine what the going value of such a chip would be if one were to bargain for it before becoming trapped in a holdout scenario. In other words, there may well be cases in which the patented invention *is* a fungible commodity so

¹¹³ For example, a car is useless without the wheels. But one could say the same thing about the gas tank. Or the spark plugs. How would one go about allocating the value of the car according to the relative contributions made by these various components when all are equally necessary?

¹¹⁴ The same is true in nuisance cases, where the question is not "how much of the factory's value is due to the pollution of plaintiff's land," but "how does the value of the factory compare to the value of plaintiff's land before it was polluted?"

¹¹⁵ See e.g. *Weatherbee v. Green*, supra n. 47 (appropriated chattel was cut timber).

¹¹⁶ Because, for example, the consideration may consist not simply of money, but of cross-licensing of the licensee's own intellectual property.

far as the improver is concerned, because she did not incorporate it in order to take advantage of the qualities that render the chip unique. Even where there is no noninfringing substitute, in some instances the patentee may have licensed frequently enough to similarly situated improvers to permit a meaningful determination as to the going market price. In these cases, it would be possible to make the rough determination of relative values that the accession doctrine requires, and to deny property rule protection where it appears that the value of the chip is small compared to that of the overall product. In other words, in contexts where it is possible to assign a non-holdout value to a patented invention just as one can assign a non-holdout value to a parcel of land, it is possible to apply the accession rule.

Just because it is possible to apply the accession rule in certain patent cases does not necessarily make it desirable. Before deciding to do so, we need to ask the same questions we have asked in other contexts: how much opportunism would the rule facilitate, how much counterbalancing risk of opportunism is there on the other side, how feasible and desirable is it to require takers to avoid infringement *ex ante*, and what sort of requirement of good faith should we impose on them to be eligible for application of the liability rule?

1. Opportunism

Much as in the context of nuisance, the practical mechanism of the accession rule imposes significant inherent limits on the extent to which it can be used by opportunistic takers. First, the Rule can be applied only where there is a readily determined market price for the use in question. This means that in those instances where the patentee chooses to protect her entrepreneurial value in commercialization of the patent by licensing particular uses either exclusively or not at all—or where the infringement occurs so early that the patentee has not yet had time to make this decision—this alone will prevent takers from appropriating those uses under cover of the liability rule. Second, there is the indissolubility requirement of accession doctrine, embodied in the nuisance context by the good faith requirement that one minimize one's spillover effects to the minimum level compatible with creation of the surplus. Here, this means that if a workaround is possible, the infringer can only avoid an injunction for as long as is required to implement one. Finally, the Rule only leads to denial of an injunction if the value added to the product by the improver is vastly greater than that of the patented use. Thus people who merely copy or make cosmetic changes to a patented invention will find no solace here.

Infringement is also similar to nuisance in that the potential opportunism of takers is counterbalanced by the need to guard against

opportunism by patentees. We have already seen that patent applicants are likely to have an information advantage over the Patent Office that enables them to take undervalued use privileges from people who did or could have developed the information on their own. Just as it is possible to purchase worthless land in the path of a factory's emissions, it is possible to acquire patent rights implicating the productive efforts of others based on a disclosure of information that provides little or no benefit to anyone. Denying property rule protection to patentees in cases exhibiting a high risk of strategic holdout can be seen as balancing out the prior denial of property rule protection to those privilege holders who would not voluntarily have ceded their use privileges in exchange for the benefit of the patentee's information.

2. Good faith

What level of *ex ante* effort to avoid holdout should be required of patent infringers in order to be eligible for application of the accession rule? We have seen that the avoidance requirements we impose on potential takers are on a sliding scale. When it comes to possessory use of land (i.e., encroachment), we generally apply the property rule regardless of good faith—people are held strictly liable for failure to recognize and acquire rights in advance for any invasion of others' land required by their productive efforts. When it comes to chattels, we allow for the possibility of error and seek to protect the improver's interest in her productive inputs so long as she reasonably believed she had the right to take and transform the chattel as she did. In nuisance, we require only that the defendant's taking of use rights have been incidental to a lawful productive enterprise, and that its magnitude be no greater than necessary for that purpose. These differing burdens correspond to differing levels of avoidance costs and differing extents to which proceeding with productive investment in the face of uncertain rights may generate information relevant to allocation.

I have already argued that the avoidance costs associated with patent law are quite large. Because one can infringe patent rights without any deliberate copying, *ex ante* avoidance of infringement requires costly affirmative steps of uncertain efficacy, such as engaging in patent searches, construing the language of patent claims in light of one's contemplated activities, and attempting to license, design around or forego implicated uses. Even after incurring these costs, there will often remain significant room for reasonable disagreement as to the scope of the claims in a particular patent and whether they read on one's contemplated activities.¹¹⁷

¹¹⁷ See David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates In Patent Cases*, 107 MICH. L. REV. 223, 240 (in appealed

This uncertainty will be greater the farther the project is from fruition, because whether a contemplated use ultimately infringes a patent claim will often depend on very specific details of the manner in which it is implemented, details whose precise configuration cannot be predicted in the abstract and whose legal significance is not always apparent on a facial reading of the patent claims.¹¹⁸ Just as proceeding with productive investments in a potential nuisance scenario generates information as to the value of the offending use and the actual extent to which its spillover effects conflict with others, doing so in the face of uncertainty as to the scope of patent rights serves to generate information that is relevant to the question whether one's activities actually infringe potentially applicable patent claims.

Another source of *ex ante* uncertainty—analogue to the uncertainty in nuisance cases as to whether a given spillover effect will be held to constitute a nuisance—is the question whether a given patent potentially covering one's contemplated activities is valid. Because of the informational advantages patent applicants necessarily enjoy over the Patent Office, many patents issue whose validity cannot withstand the scrutiny brought to bear by an interested party in litigation. Indeed, studies show that nearly half of all litigated patents are held invalid.¹¹⁹ This means that the mere fact of issuance is a very poor proxy for validity. The only way for an improver to truly ascertain whether a patent that has been or may be asserted against her activities is valid is to invest several million dollars in litigation.¹²⁰ The high cost of determining whether a given patent is actually valid and infringed—coupled with the threat of injunction if it is—causes improvers to pay significant sums of money to license patents despite serious uncertainty as to whether they need them.¹²¹

Finally, even when investments do ultimately lead to infringing

cases, the trial court is held to have wrongly construed at least one patent term 38.8% of the time, and this rate does not improve with the patent experience of the trial court).

¹¹⁸ See *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326-27, 1386 (Fed. Cir. 2006) (holding that without any information about the accused products, the record “lacks the complete context for accurate claim construction.”); Cheryl Lee Johnson, *The Continuing Inability of Judges to Pass Their Markman Tests: Why the Broken System Leaves Judges Behind, Confused and Demoralized*, 941 PLI/Pat 65, 71 (2008) (discussing the chronic inability of judges, despite their presumed exegetical skills, to consistently construe “highly abstruse patent claims cloaked with technical jargon”).

¹¹⁹ See John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLAQ.J. 185, 205 (1998) (finding that during period 1989-96 46% of written opinions by the Federal Circuit on patent validity found the patent invalid).

¹²⁰ See Bessen & Meurer, *supra* n. 85 at 132 (showing that estimated legal costs of patent suits through trial range from \$610,000 to \$4.14 million, depending on how much is at stake).

¹²¹ See Lemley & Shapiro, *supra* n. 2.

activity, these investments are not automatically wasteful in the sense that it is wasteful to lay uncompletable tracks or emit inefficient pollution. To the extent that it is possible for infringing uses of an IP resource to reduce its total societal value,¹²² the patent owner will be able to prevent them by refusing to grant any non-exclusive licenses, thus preventing the evaluation of relative values necessary to application of Epstein's Rule. There is thus no need to guard against this sort of inefficiency by imposing an additional good faith requirement on improvers. Again, we can illustrate this point using the single owner test. Someone who owned both B's patent rights and A's facilities for making and commercializing a particular improvement might conceivably refrain from selling the improvement because she thought it would interfere inefficiently with her primary plans for commercialization of the patented invention. One thing she definitely would not do, however, is spend large sums trying to ascertain whether the improvement really did or did not infringe the claims in her patent. That information has no relevance to the question how resources should be allocated.

3. The proper role of willfulness

Does all this mean that in applying the accession rule to patent infringement there is no reason to impose any good faith requirement at all? One cogent objection to this conclusion would be the following: Once the patentee has licensed a use enough times to make courts comfortable in discerning an established market value, this value will become a de facto compulsory license rate that takers can force the patentee to accept, so long as they plan to add enough inputs of their own to pass muster under the Rule. Once this sort of taking becomes widespread, the "established" market price that served to justify it will become fossilized, ceasing to be an accurate reflection of the patented use's value.¹²³ This is another example of how governance regimes lead to deterioration in the quality of the proxies they use to determine value. Luckily, patent law provides an intermediate mechanism that addresses this problem—though admittedly imperfectly—without the need to give the patentee full blown holdout power: the rule that damages may be trebled for willful infringement.¹²⁴

The statute itself only gives courts the power to increase damages up to three times. It does not state what sort of conduct should trigger this

¹²² See *supra* n. 9 and accompanying text.

¹²³ See Robert P. Merges, *Contracting Into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293, 1308-16 (1996) (discussing the market-distorting effects of compulsory license rates).

¹²⁴ See 35 U.S.C. §284.

penalty.¹²⁵ Until recently, the standard was that one had no duty to search the patent office before making productive investments, but that once one received actual notice that planned activities fell within an area claimed by someone's patent, there arose an affirmative duty to "exercise due care" to avoid infringement,¹²⁶ which meant seeking out and finding information (usually, but not necessarily, in the form of legal advice) supporting a good-faith belief that the patent was invalid, unenforceable, or not infringed.¹²⁷ The Federal Circuit recently abandoned this rule, holding that infringement is willful only if the infringer acted recklessly, which means in spite of "an objectively high likelihood that its actions constituted infringement of a valid patent."¹²⁸ This objectively high likelihood must have been "either known or so obvious that it should have been known to the accused infringer."¹²⁹

By relieving improvers of the affirmative duty of due care,¹³⁰ the Federal Circuit's new standard for willfulness reduces the burden of the avoidance costs whose utility we called into question above. Nevertheless, in cases where there is an objectively high likelihood that the improver's actions constitute infringement, the willfulness doctrine provides a strong incentive to negotiate with patent owners. This serves in turn to protect the integrity of the market signals that the system uses to determine the value of patent rights. If combined with the accession rule, the doctrine can also be seen as limiting the size of holdout premiums to three times market value. This salutary effect only works, however, if we avoid the mistake of assuming that application of the Rule should be subject to the same willfulness requirement.

Let's walk through the way this plays out. Say our hypothetical computer manufacturer is approached by the owner of the chip patent shortly before product launch. Assume that this is the first time the patent has been brought to the manufacturer's attention (though not because of any deliberate delay on the patent owner's part), and that upon investigation the manufacturer finds no basis for doubting the asserted patent to be valid, enforceable, and infringed by the component chip. It is too late, however, for the manufacturer to implement a workaround in this first product cycle without incurring catastrophic losses. Assume also that the patent has

¹²⁵ *Id.*

¹²⁶ *SRI International, Inc. v. Advanced Technology Labs, Inc.*, 127 F.3d 1462, 1464 (Fed. Cir. 1997).

¹²⁷ *See Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826-27 (Fed. Cir. 1992).

¹²⁸ *In re Seagate Technology*, 497 F.3d 1360, 1371 (Fed. Cir. 2007).

¹²⁹ *Id.*

¹³⁰ *Id.* ("Because we abandon the affirmative duty of due care, we also reemphasize that there is no affirmative obligation to obtain opinion of counsel.")

previously been licensed for similar uses for a small fraction of the value of the manufacturer's entire computer. If the case goes to trial, the manufacturer will be a willful infringer and will pay treble damages. He thus has an incentive to buy a license for up to three times the normal market value of the patent, plus the anticipated costs of litigation. If the accession rule is applied, that is the most the patent owner can extract. If the same willfulness standard used for punitive damages also determines eligibility for the rule however, the patent owner will be able to extract the full holdout premium. This violates our criterion of distributive justice, and does so without promoting efficiency since the manufacturer already has sufficient incentive to buy a license. The purpose of imposing a good faith requirement before allowing takings by accession is to incentivize takers to do their best to avoid making productive investments that depend on unauthorized use of other people's property. The only way for the manufacturer to avoid making such investments is to incur ongoing costs of patent searches and claim construction during the period of development and buy preemptive licenses to anything potentially relevant, an excessive burden that the willfulness standard has never been construed to impose. Properly understood, the purpose of the willfulness doctrine is not to incentivize ex ante avoidance of infringing investments, but to incentivize settlement rather than litigation once infringement comes to light.

VIII. CONCLUSION

Intellectual property rights and property rights in tangible property are analogous in that each consists of a bundle of use privileges protected by a right to exclude. In tangible property, the use privileges all pertain, and are defined by reference to, a single tangible resource. In intellectual property, the protected privileges are defined by reference to certain ends and means, and pertain equally to all tangible resources that can be employed to achieve the former by the latter.

The concept of rivalness has no application to intellectual property if we define rivalness to require physical interference. My use of my tangible property to build a patented machine need never conflict physically with your use of yours to do the same. But physical preclusion of alternative uses is not the only form of rivalness. We noted at the outset that rivalness is a spectrum. The factory's output of smoke does not preclude the farmer from farming, it merely harms the value of his product. Some people have argued for the expansion of the tort of nuisance beyond physical interference, to cover for example diminutions in property value caused by aesthetic harm. The problem with this is that once we leave the tether of physical interference behind, it is difficult to know where to draw the line.

If a diminution in value caused by aesthetic harm is to be actionable, why not one caused by competition? If my competing store reduces the value of yours, am I guilty of nuisance? The only way to draw lines between such various acts affecting property value would be by applying some complex set of governance standards, and Smith's analysis of information costs gives us reason to be wary of doing so without some strong reason to think those costs do not outweigh the gains from more detailed regulation of uses.

The decision to institute a system of intellectual property is a decision to institute just such a governance regime. IP grants rights to exclude that do not serve to protect a choice between noncompossible uses of tangible resources. Rather, they serve to protect the IP owner's ability to earn a return on the rival inputs invested in the creation of valuable informational works. As the purpose of the property right is different, so should be our concept of rivalness.

There are essentially two approaches an IP owner can use to earn returns on her investment. One is to use the right to exclude as a shield, behind which she (or her exclusive licensees) will be able to select and implement a uniform entrepreneurial strategy for maximizing the commercial value of the work. The shield permits this strategy to proceed and to earn whatever return the market accords it, without being undermined by competition (i.e., economically rival use of the work) from others who seek to commercialize the same work though they bore no costs of its creation. We can analogize this to a rival possessory use of a tangible resource, in that it is a strategy very likely to be disrupted by competing uses of the same work in ways that would be very difficult to remedy with damages, as we can never reconstruct what the returns on the owner's commercial strategy would have been.

The second approach is to let others undertake the task of commercialization on a nonexclusive basis, using the right to exclude as a sword to appropriate (through either licensing or litigation) some portion of whatever they earn. Note that there is nothing inherently blameworthy about this latter strategy; not all creators are situated to be good commercializers. We want IP owners to capture a portion of the gains from trade commensurate with the contribution their creations make to those gains. The problem is how to prevent the sword from being used to extract returns that go too far beyond the value of the work to cut into value created by the productive investment of improvers. It is not sufficient here, as it is in the case of land, merely to advise improvers to acquire needed rights before making themselves vulnerable to holdout through irreversible investments. The nature of intellectual property is such that one often cannot know what rights one needs until significant resources are already invested.

Thus we can analogize nonexclusive uses of intellectual property to nonpossessory uses of tangible resources. Before we shut down a productive enterprise for making nonpossessory use of someone's land, we require the landowner to make a showing that the spillover is harming a rival use of comparable value. The farmer cannot shut down the factory by arguing that he might theoretically use his land to build a luxury resort worth millions. A nonpossessory use is only regarded as rival to an actual use. Here too, however, our rules for tangible property require modification when imported to the realm of IP. It is far too easy for infringers to act before an IP owner's plans for exclusive commercialization can be implemented, and too difficult for IP owners to discover and preemptively forestall all potentially infringing investments. If we deny property rule protection to IP rights whose exclusive commercial value is not yet manifest, that value will be strangled in the cradle. Unless she has already revealed herself as a sword wielder, we must assume the owner of IP to be shielding entrepreneurial value and assist her to do so.