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Patent Infringement as Nuisance

Christopher M. Newman

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PATENT INFRINGEMENT AS NUISANCE

Christopher M. Newman⁺

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I. INTRODUCTION

Imagine that after investing considerable time, effort, and material resources, you have developed an innovative new product. The product's release date is imminent, and you have laid all of the necessary groundwork. Manufacturing is underway, distribution channels are primed, and marketing campaigns have brought pre-release buzz to its desired peak. At this point, you receive notice that your product contains an element that infringes intellectual property (IP) belonging to someone else. Perhaps your product is a complex device and only one component infringes someone else's patent. Or perhaps your product is a film in which copyrighted artwork hangs in the background in only one scene. In any case, the element in question is a small part of the overall product; if you had 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 course is no longer an option. You have made irreversible investments, and the value to you of the right to use the infringing element no longer depends simply on the value that element adds to your product compared to other means of achieving the same result. The right to use the infringing element is now worth whatever it would cost you to pull out of the market, rework your existing product, and prepare to release it all over again. If an injunction is ordered forcing you to do this, you will incur severe losses—perhaps even lose your entire investment, though most of it was spent in the development of non-infringing elements.

Assume that an injunction will be ordered in the absence of some agreement between you and the IP owner, with whom you now enter into negotiations. There are two possible outcomes: (1) no agreement will be reached, and you will be required to incur the losses of withdrawing your product, or (2) you will reach a deal allowing you to continue with the product release, but likely at the price of paying a large portion of your revenues to the IP owner—a portion much larger than that of the product's value derived from use of the infringing element. This dynamic is called "holdout," and it occurs whenever a property owner's right to exclude gives him leverage over productive efforts whose value cannot be realized without making some use of that property. As the productive party, you will not like either of the two 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 in developing the protected element.

There are essentially two reasons to be concerned about the dynamic described above. One reason is fear that the parties may fail to reach an agreement in these cases, even in circumstances in which the infringing product would not conflict with any development of the intellectual property by its owner—thus resulting in wasted resources and loss of potentially large

gains from trade.¹ The other reason for concern is the belief that even if the parties do reach an agreement, 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.² This latter position may be understood as a belief about the demands of equity, based on a particular notion of distributive justice. Alternatively, it may be based on the idea that overcompensating IP owners at the expense of people who make productive downstream use of their works inefficiently skews investment incentives.³ Either way, we would prefer, if possible, to see exchanges in which each party reaps a share of gains proportional to the value that it contributed. As a general rule, however, courts do not override a property owner's right to exclude simply because someone else has put himself over an economic barrel.⁴ The United States Court of Appeals for the Federal Circuit has observed more than once that "the right to exclude . . . is but the essence of the concept of property."⁵ This proposition was long treated as self-evidently justifying a rule that patent owners who won at trial—succeeding both in proving infringement and withstanding challenges to the validity and enforceability of the patent—were presumptively entitled to permanent injunctive relief.⁶

This presumption is no more. Writing for a unanimous United States Supreme Court in *eBay, Inc. v. MercExchange, L.L.C.*, Justice Clarence Thomas rejected the notion that IP rights axiomatically call for injunctive enforcement, stating that "the creation of a right is distinct from the provision

1. See generally Lloyd Cohen, *Holdouts and Free Riders*, 20 J. LEGAL STUD. 351 (1991) (discussing difficulties common to negotiations that often result in the failure of parties to reach an agreement).

2. Brief for 52 Intellectual Property Professors as Amici Curiae in Support of Petitioners, *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006) (No. 05-130), 2006 WL 1785363 (arguing that such a settlement amounts to "holdup money" that is "not a legitimate part of the value of a patent," but is instead, "a windfall to the patent owner").

3. See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. 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.").

4. See, e.g., *MercExchange, L.L.C. v. eBay, Inc.*, 401 F.3d 1323, 1338 (Fed. Cir. 2005) ("[C]ourts have in rare instances exercised their discretion to deny injunctive relief in order to protect the public interest." (quoting *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1547 (Fed. Cir. 1995) (internal quotation marks omitted))), *vacated*, 547 U.S. 388 (2006).

5. *MercExchange*, 401 F.3d at 1338 (quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1247 (Fed. Cir. 1989)); see, e.g., *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) ("[A] patent is a form of property right, and the right to exclude recognized in a patent is but the essence of the concept of property."); *Schenck v. Nortron Corp.*, 713 F.2d 782, 786 n.3 (Fed. Cir. 1983) ("The patent right is but the right to exclude others, the very definition of 'property.'").

6. *MercExchange*, 401 F.3d at 1338 (articulating the "general rule . . . that a permanent injunction will issue once infringement and validity have been adjudged").

of remedies for violations of that right.”⁷ The district courts, therefore, must exercise their “equitable discretion” in accordance with traditional principles to decide when the interests protected by the “right to exclude” require actual exclusion.⁸ If damages alone 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 amount to nothing more than a liability owed by the infringer. Indeed, the Supreme Court’s language appears to give IP owners the burden of demonstrating why this should *not* be the result.⁹

The *eBay* decision prompted serious debate as to whether, and in what circumstances, courts should spare infringers from the holdout dilemma outlined above by declining to grant an injunction and instead attempting to ascertain a reasonable amount of damages.¹⁰ The Court’s opinion in *eBay* offers no specific 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

7. *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 392 (2006).

8. *Id.* at 391. Several property scholars have begun to point out that this seeming anomaly of a “right to exclude” that is not necessarily enforced as such may simply stem from a fundamental error that was made by the realists in focusing on exclusion as the essence of property. In this view, the pre-realist natural and common law tradition is better read to assign property owners “a right to determine exclusively how a thing may be used.” Eric R. Claeys, *Property 101: Is Property a Thing or a Bundle?*, 32 SEATTLE U. L. REV. 617, 631 (2009); see also Larissa Katz, *Exclusion and Exclusivity in Property Law*, 58 U. TORONTO L.J. 275, 275 (2008) (arguing that the “central concern” of the structure of property ownership “is not the exclusion of all non-owners from the owned thing but, rather, the preservation of the owner’s position as the exclusive agenda setter for the owned thing”); Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 321, 323 (2009) (criticizing the “exclusion concept of patents” in patent law). As will be discussed *infra* at notes 69–83 and accompanying text, the work of Henry Smith can be read as partially reconciling these two lines of thought, justifying the enforcement of a “right to exclude” in economic terms as the most efficient means of allocating the right to determine use.

9. See *eBay*, 547 U.S. at 391–93 (“[A] plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief.”).

10. See, e.g., Lemley & Shapiro, *supra* note 3, at 2035–44 (proposing a model for patent reform that withholds injunctive relief under some circumstances); see also Vincenzo Denicolò et al., *Revisiting Injunctive Relief: Interpreting eBay in High-Tech Industries with Non-Practicing Patent Holders*, 4 J. COMPETITION L. & ECON. 571, 590–91 (2008) (arguing that courts should not withhold injunctive relief where manufacturer failed to exhibit due diligence in searching for IP rights or where redesign was impossible *ex ante*); John M. Golden, Commentary, “*Patent Trolls*” and *Patent Remedies*, 85 TEX. L. REV. 2111, 2147–48 (2007) (critiquing as overly broad Lemley and Shapiro’s model predicting “overcompensation” of patent owners resulting from the presumptive availability of injunctive relief); Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783, 784–85 (2007) (“[T]here are a number of cases arising under patent law that should not qualify for injunctive relief, including possibly the *eBay* case itself . . .”).

cases.”¹¹ In short, the only rule announced in *eBay* was that in the realm of patent injunctions, courts should not follow rules.¹²

The potential for holdout is not unique to patent and copyright law: it pervades property law and is treated differently in each context.¹³ This differing treatment makes it difficult to address the question of IP holdout simply by invoking the “concept of property”¹⁴ or the analogy to tangible possessions. Proponents for applying a strong presumption in favor of enjoining infringement tend to analogize the problem of holdout to trespass or encroachment, situations in which injunctive relief is the general—though still not infeasible—rule.¹⁵ In other situations, such as accession or nuisance, it has long been understood that deciding whether to grant an injunction is more difficult than asking whether a right to exclude has been infringed.¹⁶ If we are to draw the correct analogies between tangible property and intellectual property, we must first understand the reasons behind these different responses to holdout.

The potential for holdout arises when one party makes irreversible investments without first securing the right to use a unique resource needed to realize the value of those investments. An obvious objection to allowing these parties to escape injunction is that doing so would encourage more people to exercise the same carelessness, reducing their incentive to secure needed rights in advance and increasing the number of cases in which courts are called upon to override an owner’s right to exclude. The force of this objection in any given context depends in part on the extent to which such *ex ante* avoidance is both feasible and desirable. To successfully avoid the risk of holdout *ex ante*,¹⁷ the investing party must correctly answer two questions prior to making significant irreversible investments. First, she must correctly identify all unique resources that are owned and that are potentially implicated by the contemplated project. Second, she must determine whether the contemplated project would, if not licensed, actually infringe the property rights of the resource owners. Only after answering these questions is the investor in a

11. *eBay*, 547 U.S. at 393.

12. *See id.* (declining to adopt a categorical rule premised on a four-factor test).

13. *See infra* Part II (discussing the inefficiency and distributive injustice of holdout power in the context of property).

14. *See supra* note 5 and accompanying text.

15. *See infra* Part V.B (examining infringement in comparison to trespass and encroachment in comparison to nuisance); *see also* *Archer v. Greenville Sand & Gravel Co.*, 233 U.S. 60, 64–65 (1914) (granting injunction as relief for trespass); *Urban Site Venture II L.P. v. Levering Assocs.*, 665 A.2d 1062 (Md. 1995) (granting injunction as relief for encroachment); 9 RICHARD R. POWELL, *POWELL ON REAL PROPERTY* § 68.09 (Michael Allan Wolf ed., 2009) (discussing injunctions as proper equitable relief for a finding of encroachment).

16. *See* discussion *infra* Parts IV.B, V.B.

17. By “*ex ante*,” I mean efforts that occur prior to making the irreversible investments that render one susceptible to holdout.

position to choose between negotiating for the rights to use the resource, designing around it, or foregoing the investment altogether. We can describe the costs incurred in discovering and acting on this information as “avoidance costs”—that is, 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 correctly the two questions before committing significant resources to a project, the greater the obstacles are to ex ante avoidance of holdout.

The primary thesis of this Article is that our willingness to rescue investors from holdout by relaxing property rules in a given context depends largely on the nature of these avoidance costs and that these 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 identify property rights that an enterprise will need to acquire, there is far less to be gained by holding investors to a high standard of ex ante avoidance.

Part II discusses the nature of the holdout problem and the difficulty of distinguishing strategic holdouts from refusals to sell based on bona fide idiosyncratic or entrepreneurial value. Part III reconstructs 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 holdout.¹⁸ The advantage of property rules (in Smith’s terms, “exclusion strateg[ies]”¹⁹) 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.²⁰ Shifting to a system of liability rules (in Smith’s terms, “governance strateg[ies]”), increases information costs, because both public and private actors are required to make fine distinctions between uses in order to recognize, comply with, and enforce property rights.²¹ Further, systematic opportunities are created for undercompensation of property owners due to the inevitable gap between their knowledge of the entrepreneurial value of a given resource and the knowledge embodied in the criteria used to determine value for liability purposes. Using this analysis as a baseline, Parts IV and V examine the spectrum of property cases to observe the role played by

18. See Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 YALE L.J. 2091, 2092–96 (1997) [hereinafter Epstein, *A Clear View*]; Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1731 (2004) [hereinafter Smith, *Property Rules*].

19. See Smith, *Property Rules*, *supra* note 18, at 1728.

20. The terms “property rule” and “liability rule” stem from Guido Calabresi & A. Douglas Melamed. Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092–93 (1972).

21. See Smith, *Property Rules*, *supra* note 18, at 1728.

avoidance costs in determining when strict enforcement of the right to exclude is relaxed.

At one end of the conflicting use spectrum are possessory uses of tangible resources. Courts generally grant injunctive relief for trespass and encroachment, thus giving landowners full title to any unauthorized improvements made to their property.²² This is logical because one's need to make possessory use of land is usually easy to identify in advance, and there is little ambiguity as to whether such uses will require a negotiation of property rights. The accession doctrine, however, provides a narrow exception that allows certain good-faith improvers to retain the value they have created while paying restitution for that of what they took.²³ Such takings are rare because they are only allowed where the improver had an objectively reasonable basis for believing that she had the right to use the property and, acting in reliance on it, transformed it into something vastly more valuable.²⁴ Although this form of the accession doctrine is rarely applied, it 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.²⁵

The next point on the conflicting use spectrum is the instance of rival, non-possessory uses of land—that is, nuisances. The law of nuisance is notoriously convoluted, but it is several steps removed from strict enforcement of the right to exclude. Before a court will consider enjoining a spillover effect as a nuisance, the activity must meet the threshold requirement of significant harm.²⁶ Even where this standard is met, however, the nuisance will generally only be enjoined after the court weighs multiple factors, including the value of the nuisance-creating activity relative to that of the damage it causes.²⁷ Although cases may vary, perfect ex ante avoidance is likely to be extremely difficult where spillover effects are 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 conflicting uses that may be damaged. For some types of productive activity, actual experimentation (thus leading to the kinds of investments that render one vulnerable to holdout) may be the only way to find out what use rights the

22. See sources cited *supra* note 15 and accompanying text.

23. See *infra* Part IV.B.

24. See, e.g., *Wetherbee v. Green*, 22 Mich. 311, 312–16 (1871) (finding that good-faith improvers who make vast improvements to a chattel may retain title).

25. *Id.*

26. See *infra* Part V.A (articulating the “significant-harm rule”).

27. See RESTATEMENT (SECOND) OF TORTS §§ 822–831 (1977) (outlining the various factors needed to determine an injunction for nuisance); see also *Madison v. Ducktown Sulphur, Copper & Iron Co.*, 83 S.W. 658, 667 (Tenn. 1904) (refusing to grant an injunction because of various factors, including the value of the activity creating the nuisance).

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—such as Epstein—maintains that in nuisance cases, courts should decline to issue injunctions where there is a great disparity of demonstrated value between the offending activity and the activity that is damaged.²⁸ This rule of thumb permits the acquisition of non-possessory use privileges by accession.

Part VI addresses the realm of intellectual property. Smith argues that the same analysis of information costs favoring an exclusion strategy for tangible property also applies to intellectual property because of the benefits of modularity that arise from bundling all use rights of a given intellectual work within the same party's right to exclude.²⁹ This conclusion follows only to the extent that the reified abstraction of an intellectual work is believed to have boundaries that are as easy to identify and avoid interference with as the boundaries of physical objects.³⁰ This Article asserts that this 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 thus amount to negative easements in gross that appropriate specific use privileges that tangible property owners would otherwise control with respect to their own property.³¹ In Smith's terms, to create IP rights governed by an "exclusion strategy" is inevitably to create a governance regime in tangible property.³² Indeed, the manner in which patent rights are acquired can be analogized to a liability proceeding in which would-be takers offer information to tangible property owners as the price for a compulsory expropriation of use privileges.³³ 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

28. See Epstein, *A Clear View*, *supra* note 18, at 2102.

29. See Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 *YALE L.J.* 1742, 1748–49 (2007) [hereinafter Smith, *Intellectual Property*] (discussing the ability of property rules to reduce information costs by promoting modularity, and arguing that this renders exclusion strategies equally advantageous for intellectual and tangible property).

30. See *id.* at 1795 (asserting that the costs of solidifying an idea protected by IP principles are not "fundamentally different" than the costs of constructing tangible property).

31. See generally *United States v. Blackman*, 613 S.E.2d 442, 445–46 (Va. 2005) (defining negative easements as those that "convey rights to demand that the owner of the servient tract refrain from certain otherwise permissible uses of his own land" and easements in gross as those benefitting individual persons as opposed to those running with tracts of land (citations omitted)).

32. See Smith, *Property Rules*, *supra* note 18, at 1728.

33. Parallel arguments can be made with respect to copyright law, but there are significant differences between patent law and copyright law that require separate discussion. This Article constructs a general argument and applies it to patent law, leaving the discussion of copyright law for a future project.

than the use privileges lost.³⁴

Although 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. The accession doctrine requires a comparison of the value added by the taker to that of the original resource.³⁵ 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 difficult to determine because of the lack of a robust market. Patent owners also face higher information costs than landowners, because it is 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 far entrenched. If patent owners are to have any ability to protect and develop the entrepreneurial value of their IP resources against rival uses, the accession rule must not be applied 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 licensed use do not *rival* the IP owner's strategy of earning returns; in fact, so long as the improvers become licensees and pay for use rights, 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, however; an assumed right to exclude is the only basis on which the market can perform its function of assigning appropriate exchange value to the use rights in question. If, on the other hand, it is apparent in a given case that the market value of the protected use on its own is low compared to the value of the investments that would be destroyed by an injunction, it is justifiable to decline to issue an injunction and rely instead on 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 the useful exchange to take place.”³⁶ Why exactly is this a problem? Assume that *B* values the resource more than *A*; why would *B* not be expected simply to purchase it from *A* in a mutually beneficial exchange? Or if *A* refuses to sell to

34. See, e.g., *Wetherbee v. Green*, 22 Mich. 311, 320 (1871) (mandating that a comparison in value be considered in deciding cases of accession).

35. See generally Smith, *Property Rules*, *supra* note 18, at 1764–68 (discussing governance and exclusion regimes).

36. See Epstein, *A Clear View*, *supra* note 18, at 2094.

B, why is it not simply concluded that *A* in fact values the resource more than *B* does, meaning that the goal of economic efficiency—that is, the dedication of resources to their highest-valued uses—is furthered by the refusal? Given that there are only two readily identifiable parties to the transaction, it seems at first blush that transaction costs should be as low as possible, making it unclear why these situations should be regarded as posing any extraordinary risk of market failure.

The refusals to sell that tend to be labeled “holdouts” are those in which it is believed 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 final 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 or the value of any improvements that were present or contemplated. Critically, however, 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 while constructing the railroad up to this point—as well as all the investors’ hopes of future profits—are entirely contingent on the landowner’s willingness to sell, thus enabling the landowner 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 feel out buyers (at least to the extent possible) in order to obtain the highest price from the deal?” Why does this dynamic seem particularly troublesome in the cases characterized as “holdouts”?

As noted above, there are two different types of concerns that have been expressed about holdout situations.³⁷ The first concern—based on economic efficiency—is that holdout power may prevent the realization of potentially large social gains from trade. The second concern—based on distributive justice—is that even if an efficient transaction takes place, something about the resulting terms of exchange is socially undesirable.

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 values assigned to the resource by each of the two parties. As Richard Epstein explains, if *A* values the resource at 10 and *B* values it at 1000, then any sale price between 11 and 999 would be “mutually beneficial.”³⁸ Given that 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.”³⁹ This

37. See text accompanying notes 1–3.

38. See Epstein, *A Clear View*, *supra* note 18, at 2094.

39. *Id.*

gives rise to two possible scenarios in which the potential social gains from trade fail to materialize. In one scenario, the hardball tactics employed by both sides cause negotiations to break down such that there are no gains whatsoever. In the other scenario, the parties strike a deal, but the costs of narrowing the wide range of potentially acceptable prices to the price ultimately agreed on are so large that they dissipate some or all of the social surplus.⁴⁰ If there is more than one property owner in the position of *A*, then there is another reason why a deal may not be struck: each of the 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 made to any individual owner will guarantee *B*'s ability to realize the surplus.

This manner of describing the holdout scenario glosses over an important—though seemingly elementary—point: what exactly is meant when it is said that *A* “values” the resource at 10? In the context of this negotiation, *A* clearly values the resource at far *more* than 10; otherwise *A* would not be so tenacious in demanding a much higher price. Economic analysis is premised on the assumption that value is subjective and can be measured empirically only in relative terms and only through the preferences revealed by choices that people make in action.⁴¹ For example, if *A* is offered ten dollars for his land and refuses, then by definition he values that land at 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 the statement, “he would refuse to sell it for a price of *X*.” Why, then, do economists 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?⁴² In attempting to answer this question, it is worth pausing to consider that there are at least three very different types of scenarios that might be labeled as apparent instances of “holdout.”

In the first scenario—“idiosyncratic holdout”—*A* places a genuine subjective value greater than 10 on his present use of the resource, but does so for reasons to which no market can assign value. For example, a person

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

41. See, e.g., A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 10 (1983) (referring to this assumption as the “assumption of consumer sovereignty”); LUDWIG VON MISES, EPISTEMOLOGICAL PROBLEMS OF ECONOMICS 178 (George Reisman trans., Ludwig von Mises Inst. 3d ed. 2003) (1933) (“[T]he ultimate relevant cause of the exchange ratios of the market is the fact that the individual, in the act of exchange, prefers a definite quantity of good A to a definite quantity of good B. The reasons he may have for acting exactly thus and not otherwise . . . are of absolutely no importance for the determination of a market price.”)

42. See, e.g., Calabresi & Melamed, *supra* note 20, at 1106–07 (discussing holdout in terms of a divergence between “the price demanded” and “the value which the sellers in actuality attach”).

engages in idiosyncratic holdout when he refuses to sell his home at market value because of his sentimental attachment to it. Because the satisfaction *A* gets from continuing to live in this home cannot be transferred to anyone else, it cannot be valued in any market. Nevertheless, *A*'s refusal to sell is not strategic—he is merely demanding an amount that truly compensates him for the value relinquished. Because the basis for *A*'s demand cannot be readily evaluated by others, third parties may regard *A* as simply resisting the consummation of an efficient exchange. If we assume *A* to be truthful about his reasons for refusing to sell, the subjective theory of value gives us no basis on which to second-guess his valuation of the utility that he gains from the resource. We can say only that *A*'s use has a higher value than that of any offer he refuses, and therefore, from an efficiency standpoint, all is right with the world.

The second type of apparent holdout—"entrepreneurial holdout"—occurs when *A* believes, for reasons unknown 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 from *B*—in principle, *A* would be willing to sell for any price that exceeds his assessment of the resource's future value, discounted over the period of time that he believes it will take to realize that value. *A* may be presently unable, however, to demonstrate persuasively the basis for his assessment of the resource's future value. Or *A* may wish to keep the information to himself in order to place himself 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—from an economic perspective—it cannot be denied that *A* in fact values the resource at more than 10. There may be room for disagreement about the accuracy of *A*'s valuation, however, because it is not based on a purely subjective assessment of utility, but rather on an estimation of future uses and their uncertain market values.⁴³ In this case, whether we regard *A*'s refusal to sell as efficient depends on whether we believe that 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 type Epstein regards as a source of market failure.⁴⁴ 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 use the resource in a manner that yields a value greater than 10. Rather, it is only *A*'s knowledge that *B*, and *B* alone, stands in a position to put the resource to a higher-value

43. It may also be based on *A*'s assessment of the subjective utility he will gain from future uses of the resource, in which case the scenario is just another variety of idiosyncratic holdout.

44. See *supra* notes 41–42 and accompanying text (discussing Epstein's model of a type of holdout power that gives rise to strategic bargaining and is often considered conducive to market failure).

use—and that *B* needs this specific resource in order to realize that 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 not merely based on what he can do with it, but rather, on what he believes he can get for it.⁴⁵ 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 is done 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 that he values his ability to *exclude B* from using the resource at more than 10.

The 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 who observes that as long as the resource remains in *A*'s possession it will be dedicated to uses valued at no more than 10. In other words, it is not really *A* who values the resource at 10, it is the economist who only values *A*'s continued possession at 10.

B. Holdout as Distributive Injustice

Assume now that *A* has both the knowledge and the wherewithal to strategically hold out in a transaction with *B*. Assume also that *A* is savvy enough to achieve this 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 in the sale price of the resource.⁴⁶ Is there any reason this result should be considered unjust? In a trenchant essay on the debate over property rules versus liability rules, James Krier and Stewart Schwab assert that there is no reason to consider the result unjust because the surplus “simply represents the gains from trade, to which neither party is, *prima facie*, entitled.”⁴⁷ This assertion is true as long as the inquiry remains within the realm of Coasean efficiency analysis, but verdant though that valley is, few reside there without dual citizenship elsewhere.⁴⁸

45. In other words, in a market economy selling something is one of the most important things you can do with a resource.

46. For example, suppose the highest valued use to which *A* can put the resource is worth 10, while *B*'s investment would give the resource a value of 1000. Reallocating the resource to *B* would thus result in a social surplus of 990. If *A* manages to negotiate a selling price of 800, and each party incurs 50 in transaction costs, we are left with a social surplus of 890, of which 750 is going to *A* and 140 is going to *B*.

47. 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) (criticizing the belief that liability rules are better than property rules in situations of high transaction costs).

48. See *supra* note 43 and accompanying text.

It is surely desirable to maximize the total value we extract from the resources at society's disposal, and economics derives its normative force from claiming to demonstrate objectively that certain arrangements will further or impede this goal more than others. On the other hand, few would maintain that as long as social value is maximized, we have no reason to care how enjoyment of that value is distributed among the members of society. There are many possible criteria one might use to decide whether a particular distribution of wealth is just.⁴⁹ Each such criterion would need its own philosophical justification, and each would in turn give rise to a different framework for deciding when justice requires that the set of efficiency-maximizing rules be modified or departed from. The argument developed in this Article will consider only one such criterion of distributive justice: that requiring newly created value to be allocated among persons in proportion to the relative contributions those persons made to the generation of that value, through inputs such as initiative, effort, skill, investment (including contributions of both tangible property and labor), and risk-bearing. A rigorous philosophical justification of this criterion is beyond the scope of this Article, and no claim is made here as to its relative importance or validity compared to other possible criteria of distributive justice. The notion that investment of productive inputs should give one a claim on any resulting value—in addition to being intuitively appealing and deeply embedded in our society⁵⁰—has long been one of the key justifications both for recognizing IP rights in the first place and for tending to protect them by a strict right to exclude.⁵¹ Owners of IP rights often feel strongly that it is *just* for them to

49. See, e.g., Posting of Lawrence Solum to Legal Theory Lexicon, http://lsolum.typepad.com/legal_theory_lexicon/2005/07/legal_theory_le.html (July 10, 2005).

50. The classic source is, of course, Locke's justification of private property on the ground that ownership arises when someone "hath mixed his [l]abour with, and joynted to it something that is his own, and thereby makes it his [p]roperty. It being by him removed from the common state [n]ature placed it in, it hath by this [l]abour something annexed to it, that exludes the common right of other [m]en." JOHN LOCKE, TWO TREATISES OF GOVERNMENT 288 (Peter Laslett ed., Cambridge Univ. Press 1988) (1690). It ought to, but unfortunately does not, go without saying that when Locke says "labour" in this context he means *productive* labor—that is, labor that actually renders the common property more capable of satisfying human wants than it was before. See Adam Mossoff, *Locke's Labor Lost*, 9 U. CHI. L. SCH. ROUNDTABLE 155, 158–61 (2002) (responding to various philosophers who have dismissed Lockean property theory as incoherent or absurd based on their own incoherent or absurd notions as to what qualifies as "labor").

51. See, e.g., Wendy J. Gordon, *On Owning Information: Intellectual Property and the Restitutionary Impulse*, 78 VA. L. REV. 149, 277–78 (1992) (discussing a trend in intellectual property law to treat all appropriations of value created by another as actionable). Gordon notes that

judges may feel no need to examine the trend because the restitutionary notion that one deserves to keep the "fruits of his labor" seems so evidently correct, so evidently in accord with traditional notions of corrective justice and traditional conceptions of the

command holdout premiums, precisely because those rights—they assert—represent value that is entirely the result of their productive efforts. However, this claim is a two-edged sword: once the value at issue seems to owe more to the improver's efforts than the owner's property, justice may seem to favor overriding the owner's absolute right to exclude in favor of a damages award that gives each contributor his due.

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, holding that the value of any resource is determined by the amount of effort contributed to its production. Since the marginal revolution in economic theory, mainstream economists have rejected the labor theory—instead viewing the value of a resource as determined by its marginal utility and relative scarcity.⁵² 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. Given that both the content of human wants and the scarcity of any given resource can change at any time for an indefinite number of reasons that may or may not be attributable to deliberate human action, some doubt should exist as to whether, under the subjective theory, *any* human action produces value. At the very least, any judgment that it does will raise difficulties similar to those encountered in applying the legal concept of “proximate cause.”

We need not overstate the problem, however: notwithstanding constant change, there is still enough continuity in our constellations of wants and resources that successful productive effort is possible. Although the value of a given resource will never be entirely attributable to human effort, it will often be possible to identify with tolerable certainty human actions that have contributed to a resource's present ability to satisfy particular wants.⁵³ Moreover, distributive justice requires only that such judgments be made in rough comparative terms sufficient to decide whether one claimant has a significantly stronger case than the other.

judicial role, that giving legal protection to intellectual products appears to require no special justification.

Id.

52. See, e.g., Robert D. Cooter, *The Best Right Laws: Value Foundations of the Economic Analysis of Law*, 64 NOTRE DAME L. REV. 817, 818 (1989) (“A clean answer to the ‘paradox of value’ is that, while water is more useful and its total utility exceeds diamonds’, the relative scarcity of diamonds makes their marginal utility exceed water’s.”).

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

III. THE ADVANTAGES OF PROPERTY RULES

This Article has described two reasons why holdout scenarios might be regarded as problematic. The first is an efficiency concern—that holdout 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.⁵⁴ 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.⁵⁵ 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. Or, to use the standard jargon popularized by Calabresi and Melamed: why is property protected by “property rules”?⁵⁶

A. Reasons for Not Attempting to Correct Holdout Inefficiency

A central objection to the use of liability rules is that they lead to undercompensation of resource owners—an effect that has been dubbed “Epstein’s Law.”⁵⁷ Epstein’s Law rests on two reasons why compensation will systematically fall short under liability rules. The first reason is that there are costs to expropriated resource owners that the compensation mechanism cannot address even in principle, because takings damages necessarily ignore all elements of subjective loss.⁵⁸ For example, when the fair value of someone’s house is being determined, only those aspects of the house capable of being valued in a market can be considered. No attempt is made to compensate the owner for the value of subjective factors, such as the owner’s sentimental attachment to the home, his social investment in the neighborhood,

54. See *supra* Part II.A.

55. See *supra* Part II.B.

56. See Calabresi & Melamed, *supra* note 20, at 1105–10. In Calabresi and Melamed’s terminology, an entitlement protected by injunction is subject to a “property rule,” which means that taking it without the owner’s consent subjects one to severe sanctions designed to be prohibitive. *Id.* at 1106. When an entitlement is protected by a “liability rule” on the other hand, taking it without the owner’s consent only renders one liable to pay damages to the owner in an amount determined by reference to some collectively determined criteria. *Id.* at 1107.

57. See Lemley & Weiser, *supra* note 10, at 788.

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.”

Id. at 787–88 (quoting Epstein, *A Clear View*, *supra* note 18, at 2093).

58. See Calabresi & Melamed, *supra* note 20, 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.”).

his knowledge of the home's available resources, or his comfort in familiar habits of everyday life. Such intangibles can be given economic weight only when they are protected by the right to engage in idiosyncratic holdout—that is, the right to exclude.⁵⁹

Subjective loss in value is not the only element to elude compensation. Consequential damages, such as the disruption that occurs on the loss of an asset needed to operate one's business, also go uncompensated in a liability regime.⁶⁰ As Epstein points out, commercial relations also rely heavily on the expectation that goods promised will actually be tendered, and substituting expectation damages is not satisfactory.⁶¹ This is because “[t]he 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.”⁶² In a broad sense then, the threat of non-consensual takings undermines security of possession and security of exchange, both of which are needed to maintain a complex social order and to conduct a satisfactory personal life.⁶³ All of these concerns fall under the rubric of use value—that is, they pertain to the utility that owners derive from being able to rely on specific physical resources without interference.

The second reason underlying Epstein's Law is that even where efforts are made to compensate for those elements of use value that should in principle be susceptible to objective appraisal, there will nevertheless be systematic bias toward undervaluation.⁶⁴ Although the “law” has been named after Epstein, the most thorough explanation of this dynamic is offered by Henry Smith.⁶⁵

59. See *supra* pp. 71–72 (describing a holdout scenario in which the property seller values his property higher than market value to account for subjective factors).

60. See Epstein, *A Clear View*, *supra* note 18, at 2093. It is not actually impossible, in principle, for a takings system to attempt to provide compensation for consequential damages the same way a tort system does; however, such is not the normal practice. See, e.g., RICHARD A. EPSTEIN, *TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN* 51–56, 80–86 (1985) (exploring theories of providing compensation for consequential damages and takings of goodwill).

61. See Epstein, *A Clear View*, *supra* note 18, at 2099 (observing that the common contracts principle known as the “perfect-tender rule” is premised on the notion that a merchant is expected to deliver goods, not the value of those goods in expectation damages).

62. *Id.*

63. See *id.* at 2093 (“Over time, the inefficiencies of a liability system cascade until the security of possession and the security of exchange needed for complex commercial life and a satisfying personal one are no longer available.”).

64. See *id.*; Lemley & Weiser, *supra* note 10, 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.”).

65. See Smith, *Property Rules*, *supra* note 18, at 1764–68 (examining the “[m]anipulation and the [d]eterioration of [l]iability [s]ignals”).

Smith's analysis of property and liability rules focuses on the costs of producing information about resources and activities.⁶⁶ 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.⁶⁷ This gives rise to multiple categories of costs—for example, the cost of investigating resources and their potential uses (assessment costs); the cost of deciding which use—or set of uses—has the highest value (allocation costs); the cost of implementing allocative decisions by creating and maintaining a set of rules that govern day-to-day use of the resource (rulemaking costs); the cost of communicating these rules to those who need to know them (promulgation costs); the cost to those who need to know the rules of informing themselves about and complying with the rules (compliance costs); and the costs of monitoring and enforcing compliance (monitoring and enforcement costs). All of 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 individual owners—as opposed to public officials—make decisions about resource allocation.⁶⁸

Smith describes two broad strategies for making use decisions about resources: the “exclusion strategy” and the “governance strategy.”⁶⁹ An exclusion strategy delegates to private-property owners all decisions concerning assessment, allocation, and rulemaking.⁷⁰ 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.⁷¹ 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.⁷² A governance strategy, on the other hand, employs some form of collective decision-making to select and evaluate resource uses, dealing directly with some or all of the issues that are left for owners to handle under exclusion.⁷³ To the extent that the law moves in the direction of a governance regime, some official body must set rules governing these matters so that the functions of assessment, allocation, and rulemaking can be performed collectively rather than privately. As a result, these functions will need to be performed and justified publicly in

66. *Id.* at 1753–54.

67. *Id.*

68. *Id.* at 1755.

69. *Id.* at 1755–56.

70. *Id.* at 1755.

71. *Id.*

72. *Id.*

73. *See id.* at 1755–56.

accordance with legal procedures, which is already a reason why one would expect the associated costs to be higher than they would be in an exclusion regime.

In addition to being costly, the public nature of decision-making in a governance regime gives rise to the likelihood of undercompensation for owners when resource uses are allocated to other parties (takers). This occurs because there will always be a gap between the best known uses of a resource and the best publicly *verifiable* uses of that resource—a gap that can (and will) be taken advantage of by takers. Two interrelated reasons cause this gap. The first reason stems from the nature of the entrepreneurial function, which consists of making decisions about resource use in response to various degrees of uncertainty.⁷⁴ Entrepreneurial owners develop information that is needed to turn uncertainty into risk and make bets on such information before it can be credibly communicated to others.⁷⁵ Under a governance regime, an opportunistic taker need only invest enough resources in gathering information—or in free-riding on information generated by the present owner—to determine that a resource is worth more than its objectively verifiable value, at which point the taker is in a position to profit by taking property and undercompensating the owner. An owner engaged in what was earlier described as entrepreneurial holdout has decided that the best time to assign a publicly shared valuation to the resource is sometime in the future.⁷⁶ Under an exclusion regime, both the benefits of getting this right and the costs of error are internalized, giving the owner proper incentives to invest in the development of information about the resource's best uses.⁷⁷ Under a governance regime, an opportunistic taker can force officials to undertake public valuation of a resource in the present, even though the best time to do so may be in the future.⁷⁸

The second reason for the gap between the best known uses and those that are publically verifiable is the inherent imperfection of proxy signals necessarily used to determine use values in a governance system. To make publicly verifiable determinations of value, officials must establish objective criteria to guide the value determination. Thus, in a governance regime, the

74. By uncertainty, we do not simply mean risk; rather, we mean risk that cannot be expressed as an actuarial probability. As Smith observes, entrepreneurs profit from the opportunities afforded by uncertainty; if everyone shared identical information about risk, entrepreneurial profit would vanish. *Id.* at 1725; see also LUDWIG VON MISES, HUMAN ACTION: A TREATISE ON ECONOMICS 293 (Henry Regnery Co. 3d rev. ed. 1966) (1949) (“If all entrepreneurs were to anticipate correctly the future state of the market, there would be neither profits nor losses.”).

75. Smith, *Property Rules*, *supra* note 18, at 1725.

76. *Id.* at 1763–64.

77. *Id.*

78. *Id.* at 1763.

allocation function itself involves internal costs of rulemaking, promulgation, compliance, and enforcement (that is, those costs associated with either eminent domain hearings or lawsuits for damages), in addition to those costs 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 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.⁷⁹ 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 actually taste better than their color would indicate.⁸⁰ Meanwhile, apple sellers will invest in techniques to make apples appear redder without actually improving their taste, thus causing the correlation between color and flavor quality to deteriorate over time.⁸¹ A governance regime will be forced to invest constantly in reevaluating and recalibrating its criteria for determining use values if it intends to stay ahead of manipulation and deterioration. In other words, rulemaking costs will be ongoing—and substantial—because of the public nature of the deliberations involved.

In an exclusion regime, the tasks of assessment, allocation, and rulemaking for resource use are delegated to private owners, and all public officials must do is protect that delegation. This, too, requires rulemaking and promulgation—but of a much simpler variety than that directed at daily governance of uses—because it focuses on rough, low-cost signals that serve indirectly to protect the large and unspecified set of uses delegated to the owner.⁸² A 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 marking physical location are far less vulnerable to manipulation and deterioration, and thus the costs of public rulemaking are far lower than those incurred when rulemaking involves the direct identification and pricing of specific uses.⁸³

Another 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 individuals who have theoretically absolute legal rights to exclude others from

79. *Id.* at 1764.

80. *Id.*

81. *Id.*

82. *Id.* at 1765.

83. *Id.* at 1745–46.

their property will invest in fences, guards, anti-theft devices, and other means to thwart takings by people undeterred 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 also 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.

1. 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 has already been 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.⁸⁴ This results in relatively low compliance costs because it is relatively easy for third parties to know when they are at risk of interfering with owners' property rights. For example, when *X* sees an unfamiliar car parked somewhere, he automatically knows that he is excluded from using it in any way. It is not necessary to know who the owner is or to weigh the specific use that *X* might have made of the car against any valuation standard. Such ease of notice is important, because property rights are rights *in rem*—that is, they can be enforced against the rest of the world in perpetuity, without reference to any relationships between particular persons.⁸⁵ This means that a wide and indefinite group of people must incur information costs in order to comply with these rights. For this reason, property rights are usually subject to mandatory limitations, such as the *numerus clausus* doctrine, which limits these rights to a menu of standardized forms that articulate the types of property rights and the ways in which they can be subdivided.⁸⁶ Under a governance regime, determining whether or not *X* can use any given parked car (including his own) at any given time for any given purpose could require him to research the applicable use rules promulgated by officials and to discern whether designated circumstances exist under which use is permitted. As the number of defined use rights increases, so do the compliance costs for those who must take them into account when acting. The same is true for monitoring and enforcement costs; the more fine-grained one's rules governing use, the higher the cost to detect violations. Finally, it is far easier to ascertain

84. See also *id.* at 1765.

85. See, e.g., *id.* at 1768; see also *ReMine ex rel. Liley v. Dist. Court of Denver*, 709 P.2d 1379, 1382 (Colo. 1985).

86. See Smith, *Property Rules*, *supra* note 18, at 1768; see also Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 23–24 (2000) (exploring the *numerus clausus* principle and noting that it “presents the picture of a fixed menu of options from which deviation will not be permitted”).

the remedy prescribed by a property rule than it is to value uses for determining an appropriate level of damages.⁸⁷

To summarize, in order to decide whether overall efficiency would be served by a policy of intervening in cases of holdout, the costs in the following table must be weighed:

COSTS OF MAINTAINING EXCLUSION REGIME (that is, permitting holdout to take its course):	COSTS OF USING GOVERNANCE REGIME (that is, of intervening in holdout):
<p>Efficiency losses (that is, failure to dedicate resources to highest value use) caused by:</p> <ol style="list-style-type: none"> 1. <i>Strategic holdout</i> (where it prevents efficient transfer from occurring); and 2. <i>Entrepreneurial holdout</i> (where it is based on overestimation of resource's future value). 	<p>Efficiency losses (that is, failure to dedicate resources to highest value use) caused by:</p> <ol style="list-style-type: none"> 1. Failure of liability rules to account for <i>idiosyncratic value</i>; 2. <i>Consequential losses</i>, including the undermining of expectations of stability in possession; and 3. Tendency of liability rules to facilitate <i>opportunism</i> based on manipulation/deterioration of use value proxies.
	<p>Increased administrative costs:</p> <ol style="list-style-type: none"> 1. Increased <i>assessment and allocation</i> costs due to need for collective decision-making; 2. Increased <i>rulemaking</i> costs due to signal deterioration and manipulation; 3. Increased <i>promulgation, compliance, and enforcement</i> costs due to broad application of fine-grained use rules; and 4. Increased <i>self-help</i> expenditures.

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87. On the other hand, the costs of actually enforcing an injunction may outweigh those of enforcing a damages award, as the former requires officials to bring about specific actions pertaining to unique objects, while the latter may be levied against any available property belonging to the defendant.

This comparison suggests that the goal of efficiency justifies protection of possessory interests in tangible resources with property rules, rather than liability rules—or in other words, the tendency of our legal system to allow strategic holdout to run its course. Indeed, to the extent that the subjective theory of value is maintained, it is questionable whether 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 use by definition.

2. Reasons for Encouraging Ex Ante Avoidance of Possessory Holdout

By refusing to intervene in holdout scenarios, we give would-be property purchasers an incentive to avoid becoming caught in them. According to our analysis, however, the only way that a would-be purchaser could create a holdout situation is by generating a potential surplus. Is not there a cost in discouraging people from doing this? In fact, it is not the cultivation of the surplus that we want to discourage, but rather, the failure to secure needed rights to resources before doing so. One might argue that just as owners of resources have incommunicable entrepreneurial information, so do would-be purchasers. Although we may think that owners are generally in the best position to perform the function of assessment, we cannot seriously think that this function should be *exclusively* exercised by owners. 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 thus more easily appraised by third parties. Rather than making an allocation decision based on the competing speculations of the owner and the purchaser, the determination can now be based on a more concrete demonstration of the productive uses of which the resource is capable.

This reasoning is flawed for a number of reasons. First, most of the knowledge that would likely 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 except the stretch that would traverse *A*'s property would effectively demonstrate that the railroad could be completed upon obtaining the right to use *A*'s property. Entrepreneurial assessment, however, seeks to answer another question 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 because the two uses are mutually exclusive and can never be compared in practice. One can try through various means—such as research into the expected shape of consumer demand—to predict which use would generate more value, but proceeding with construction will not do much to enhance the accuracy of these prognostications. It will,

however, commit scarce inputs to an enterprise that may or may not be the most efficient use of the resource. If not, either the resource must be allocated inefficiently or the inputs will be wasted. Collective decision-makers are likely to give these tangible sunk costs greater weight than the owner's subjective or entrepreneurial judgments.⁸⁸ 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 identifying the efficient result in a situation where cooperative action between multiple parties is not possible.⁸⁹ To apply the rule, imagine that all of the resources whose allocation is at issue are under the control of a single owner, and ask what he would do. This approach cannot overcome the limits imposed by the subjective theory of value on our ability to discern efficiency, because the answer to the question of what the single owner would do depends entirely on the state of knowledge and preferences of that owner. The single-owner rule may, however, help distinguish actions that are valuable to the process of resource allocation from those that are wasteful. Thus, if we assume that our landowner and railroad entrepreneur are the same person, then no matter what decision this person might ultimately make about which use of the land is more valuable, something that 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 many possible uses of a given resource, they would be compounded exponentially by the difficulties that would be faced in attempting collectively to determine the fair 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.⁹⁰ 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 also know that the changes in a

88. See, e.g., *Boomer v. Atl. Cement Co.*, 257 N.E.2d 870, 873 & n.* (N.Y. 1970) (denying an injunction that would have shut down a cement plant while noting that the defendant's investment in the plant was "in excess of \$45,000,000").

89. See Richard A. Epstein, *Holdouts, Externalities, and the Single Owner: One More Salute to Ronald Coase*, 36 J.L. & ECON. 553, 556-57 (1993) (advocating the "single owner" device as a useful framework for determining the most beneficial joint output).

90. See Smith, *Property Rules*, *supra* note 18, at 1753-54 (discussing the advantages of low-cost proxy signals inherent in an exclusion strategy system).

resource's value can never be attributed entirely to the owner's productive inputs. In each case, however, there is reason to believe that the delegation is likely to mimic the desirable result more often than not, and more importantly, to do so often and well enough that the errors are 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 proxies for 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.⁹¹ 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 that 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 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 society is simply unwilling to recognize *A*'s subjective enjoyment of a resource as having a value greater than the tangible benefits expected from that use. 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 idiosyncratic losses may sometimes need to be discounted in the face of an apparently great potential surplus, the other costs on the right side of the ledger suggest that this should be done very sparingly. The lower the bar is for making such forced transfers, the more expectations of stable possession are undermined, and opportunism encouraged and rewarded. 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 types of holdout situations in which society has signaled a readiness to intervene.

91. See F.A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519, 526 (1945).

These considerations suggest a rationale for why intervention is only allowed in situations of possessory holdout by means of *ex ante* takings proceedings (such as eminent domain proceedings), rather than by *ex post* proceedings (such as suits for damages), and why the former is permitted to be initiated only by the state and only for a public purpose.⁹² The need to publicly justify a taking before it occurs reduces consequential losses, because it prevents owners from being surprised by the sudden loss of resources. Although the state can certainly engage or collude in opportunism, its limited resources and need for collective decision-making should at least render it less enterprising in this regard than private actors. The public use requirement, to the extent that it is effectively implemented, provides some assurance that the projects for which owners' idiosyncratic valuations will be overridden are projects that actually provide significant benefits to the majority.⁹³

The administrative costs point in the same direction. Whether takings proceedings are *ex ante* or *ex post*, costs will be incurred for collective decision-making with regard to assessment, allocation, and rulemaking. The costs of making, promulgating, and enforcing rules governing takings are likely to be somewhat smaller, however, when the state is the only potential taker than they would be if any private person may legitimately become one. Finally, the scope of self-help expenditures is likely to be much more restricted when owners do not fear that private parties may legally take their resources without notice.

B. *The Accession Rule*

Just as rare situations in which the perceived disparity between tangible efficiency gains and idiosyncratic value impel us to override the right to exclude, so too do situations in which we perceive radical disparity between the value of an improved resource and the owner's productive contribution to that value. The law of accession addresses this situation: when one person takes a resource owned by another and increases its value dramatically through the application of productive effort (and perhaps the addition of other resources), the law does not necessarily regard this added value as belonging to the original owner.⁹⁴ Where the resource has been so altered that it cannot be separated 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 impose a

92. See, e.g., Epstein, *A Clear View*, *supra* note 18, at 2092–93 (discussing the use of property rules and the limited applicability of takings under legal supervision).

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

94. See *Wetherbee v. Green*, 22 Mich. 311, 313–314 (1871).

liability rule by assigning ownership to the improver and giving the original owner damages for the value of the property in its original state.⁹⁵

It is worth pausing to clarify the term “accession,” which can refer doctrinally both to the rule whereby an improver gains title to a chattel and the rule whereby a landowner obtains title to unauthorized improvements.⁹⁶ In other words, the concept “accession” refers to the general problem of assigning title when preexisting property and labor belonging to different parties are mixed—a problem that has been resolved differently in different contexts. For purposes of the following discussion, the “accession rule” will refer to the doctrine that good-faith but unauthorized improvers of any sort of property who create value disproportionate to that of the property taken should, at least under some circumstances, be awarded title to that newly created value. One can regard this principle as a special instance of a more fundamental principle of “accession”; namely, that title to newly created value should be allocated to the owner of the resource most closely tied to that value.⁹⁷ Thus, the owner of the tree or cow is said to own the fruit or calf by accession, and the traditional doctrine of land accession allocates to the landowner title to any fixtures.⁹⁸ The version of the “accession rule” discussed here reflects the understanding that in some circumstances, the resource most closely tied to new value is the

95. *See id.* at 320 (refusing to allow plaintiff landowner to recover hoops created by a good-faith improver from timber cut on plaintiff’s land). Although this doctrine had traditionally been conceived in terms of whether the original property still existed *in specie*, Justice Cooley recognized that for purposes of equity, the key issue 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 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. at 320–21 (articulating Justice Cooley’s comparative value theory); *see also* Earl C. Arnold, *The Law of Accession of Personal Property*, 22 COLUM. L. REV. 103, 103–07 (1922) (discussing the *Wetherbee* decision to award the defendant the improved property).

96. BLACK’S LAW DICTIONARY 17 (9th ed. 2009) (defining accession).

97. *See* Thomas W. Merrill, *Accession and Original Ownership*, 1 J. LEGAL ANALYSIS 459, 463 (2009).

98. *See id.* at 464–67.

investment of the improver rather than the tangible property that was used to create the value.⁹⁹

When applied, the accession rule is a departure from the exclusion strategy.¹⁰⁰ Strict exclusion principles dictate that the owner of a resource is entitled to deny all others access to it, and that the state will enforce this denial. The actions of the improver in indissolubly mixing her own labor and resources with the owner's property merely give rise to another case involving the general holdout scenario, leaving *B* in a position where her ability to reap the surplus created by her labor is held hostage to *A*'s right to exclude.

Though this result offends our notion of distributive justice, Smith's analysis of information costs suggests that exclusion is nevertheless the preferable approach.¹⁰¹ The administrative advantages are obvious. Under exclusion, a court need only identify the original owner and enforce his right to the resource (or whatever is left of it). The accession rule, on the other hand, is a governance strategy forcing the court to evaluate the relative contributions of the original resource and the improver's contributions to the present value of the resulting asset in order to award ownership. It also requires the court to determine a specific value for the lesser of these two contributions, so that the party not obtaining title may obtain restitution. Finally, the accession rule undermines stability of possession, because owners may lose control of resources without their prior consent.

Despite all of these costs, however, the law persists in applying the accession rule. As we have seen, it did so first in cases involving improved chattels.¹⁰² The courts that adopted the rule in those cases did so because they believed that in at least some circumstances, distributive justice required it.¹⁰³

99. Merrill recognizes that Lockean labor theory can be seen as based on an accession theory, though he later characterizes Locke as "unabashedly ground[ing] original ownership of property in first possession . . ." *Id.* at 465, 497. While elements of both theories are present, I believe the former characterization to be the better reading of Locke's position given his emphasis on the disproportionate extent to which the value of a resource to human beings arises because of the labor invested in it.

100. In Merrill's framework, this conflict between "exclusion" and "accession" would be described not as a conflict over *whether* to apply an accession rule, but as one over *which* accession rule to apply—that is, a conflict over which resource should be regarded as having the most prominent relationship to the new value: the tangible property taken without permission or the productive investments of the improver.

101. See Smith, *Property Rules*, *supra* note 18, at 1742–43.

102. *Wetherbee v. Green*, 22 Mich. 311, 313 (1871).

103. *Id.* (finding that to award all of 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"); see also Arnold, *supra* note 95, at 106 (showing that even before Cooley's articulation of the comparative value theory, courts 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*

More recently, a version of the rule has come to be applied even in the area of encroachments on land. The traditional American common-law rule was that improvements to land, whether made in good or bad faith, simply belonged to the owner of the land.¹⁰⁴ As for structures built across boundary lines, the owner of the land encroached upon is generally entitled to a mandatory injunction directing removal of a trespassing structure.¹⁰⁵ This is the paradigmatic application of the exclusion strategy; yet in practice it, too, is subject to exception, albeit an ostensibly stringent one, as recently stated by the Washington Court of Appeals in *Proctor v. Huntington*:

Generally, courts will order an encroacher to remove encroaching structures even though it is extraordinary relief. But we have recognized an exception where such an order would be oppressive. To trigger the exception, the encroacher must prove by clear and convincing evidence that (1) he did not simply take a calculated risk or act in bad faith, or act negligently, willfully, or indifferently in locating the encroaching structure; (2) the damage to the landowner is slight and the benefit of removal equally small; (3) there is ample remaining room for a structure suitable for the area and there is no real limitation on the property's future use; (4) it is impractical to move the encroaching structure as built; and (5) there is an enormous disparity in the resulting hardships.¹⁰⁶

The motive for creating this exception is somewhat different on its face from the one expressed in *Wetherbee v. Green*.¹⁰⁷ In chattel accession, the question is who shall own the value created by the improver. In encroachment, it is whether that value should be destroyed at the landowner's request.¹⁰⁸ While the latter concern is not, strictly speaking, distributive, both nevertheless flow

producer of that increased value, to be deprived of it" (quoting *Lampton's Ex'rs v. Preston's Ex'rs*, 24 Ky. (1 J.J. Marsh.) 454, 461 (1829)).

104. See Kelvin H. Dickinson, *Mistaken Improvers of Real Estate*, 64 N.C. L. REV. 37, 38–39 (1985); John Henry Merryman, *Improving the Lot of the Trespassing Improver*, 11 STAN. L. REV. 456, 465 (1959).

105. See L.C. Warden, *Mandatory Injunction to Compel Removal of Encroachments by Adjoining Landowner*, 28 A.L.R. 2D 679, 686–91 (1953) (collecting cases).

106. *Proctor v. Huntington*, 192 P.3d 958, 964 (Wash. Ct. App. 2008) (footnote omitted) (citations omitted).

107. *Wetherbee*, 22 Mich. at 319–20.

108. Law and economics analysis would have us believe there is no real difference between the two scenarios—Coase tells us that if the improvement is efficient and transaction costs are low, the injunction will result not in actual destruction but in a transfer payment. Such reasoning, however, is fundamentally at odds with the traditions governing equitable injunctions. These extraordinary interventions are intended to prevent or rectify harms that no lucre can salve; to seek one merely as a bargaining chip is to belie the necessary avowal that money damages are inadequate. Thus, courts of equity tend to assume that an injunction will be enforced if granted, and ask whether this result would be “oppressive,” using some analysis similar to the one stated by the court in *Proctor*.

equally from our same principle of distributive justice—it is “oppressive” to deprive someone of the value created by her productive investment without a compelling reason.¹⁰⁹

C. *Keeping the Accession Rule Within Bounds*

Because distributive justice and efficiency appear to be at odds in accession cases, the question becomes one of identifying the circumstances in which we can afford to purchase the former without incurring intolerable losses to the latter. The test set out in *Proctor* does this through five enumerated requirements, which we can parse as follows: number (1) guards against strategic takings by encroachers, numbers (2) and (3) seek to avoid any likely loss of idiosyncratic or entrepreneurial value by the owner, number (4) requires that the encroacher’s productive labor be indissolubly mixed with the taken property, and number (5) requires a severely disproportionate hardship to the encroacher before an injunction will be withheld.

1. *The Problem of Good Faith*

Much though we yearn to see distributive justice in individual cases, the accession rule threatens to impose dynamic efficiency costs that 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.¹¹⁰ 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.

What do courts mean by good faith in accession cases? The *Wetherbee* case provides an example.¹¹¹ Defendant *Wetherbee* claimed that, before cutting the timber from which he made his hoops, he had obtained an abstract of the title to the premises from a firm of land agents at the county seat and purchased a

109. Cf. Arnold, *supra* note 95, at 106 (discussing the “injustice of permitting the bona fide producer of . . . increased value, to be deprived of it”).

110. See *Wetherbee*, 22 Mich. at 313 (“Where vicious motive or reckless disregard of right are not involved, to inflict upon a person who has taken the property of another . . . is so opposed to all legal idea of justice and right”); Arnold, *supra* note 95, at 108; Warden, *supra* note 105, at 705–09 (collecting cases illustrating the proposition that “[w]here an encroachment . . . is intentional or wilful, a mandatory injunction will ordinarily be granted to compel its removal, without regard for the relative conveniences or hardships which may result”).

111. See *Wetherbee*, 22 Mich. at 311–12.

license from Summer, one of the two parties identified as title owners of the land.¹¹² Summer told Wetherbee that he was authorized by the other owner to make the sale, and Wetherbee cut the lumber in reliance on this statement. In fact, however, Summer had already sold his interest to others, who then joined with the co-owner to sue Wetherbee.¹¹³ Justice Cooley ruled that if Wetherbee could prove that his story was true, it would justify relieving him from the burden of injunctive relief.¹¹⁴ However, Justice Cooley did not explain why. After all, Wetherbee could have avoided his predicament by tracking down the second co-owner to ensure his consent.

Efforts to ascertain title are not costless, and they yield diminishing returns of increased certainty. If the apparent likelihood that one's intended use will violate property rights is represented by p , and the harm the intended use will inflict on the owner by H , then title search efforts costing more than pH look likely to be wasteful.¹¹⁵ Much as Judge Hand famously suggested that one should not be held negligent when $B > PL$,¹¹⁶ we might conclude that one should not be held to have acted in bad faith when $S > pH$, where S is the cost of the next untaken step to further ascertain title. Thus, when Wetherbee first spied the trees, p was very high—he knew they must be owned by someone. By the time he cut them, p was very low—amounting to the chance that Summer was engaged in deliberate fraud. Given the fungible nature of the commodity in question, it is reasonable to think that the added trouble of tracking down the other owner outweighed the value of pH . As Stewart Sterk has demonstrated, a rule granting injunctions every time an improver acts in the face of uncertainty will tend to incentivize inefficient investment in search costs, because the risk of holdout is likely to outweigh that of having to pay damages for property wrongfully taken.¹¹⁷

Here we must be cautious. For a court of equity to define the requirements of good faith as a function of H would run afoul of Epstein's Law by assuming

112. *See id.* at 312.

113. *See id.*

114. *See id.* at 320.

115. This way of modeling the problem is inspired by Stewart E. Sterk, although he does not purport to define good faith in this manner. Stewart E. Sterk, *Property Rules, Liability Rules, and Uncertainty About Property Rights*, 106 MICH. L. REV. 1285, 1302–05 (2008). In fact, Sterk's analysis shows the range of inefficient searches to be much broader than those for which $S < pH$, because one must consider not only the harm to the putative owner but the cost to the would-be improver of abstaining from use (A). Only where this avoidance cost is less than H but greater than pH would certainty as to property rights result in a decision by the improver to abstain from an otherwise inefficient use of the property. *See id.* at 1306–08.

116. *See United States v. Carroll Towing Co.*, 159 F.2d 169, 173–74 (2d Cir. 1947). *But see* Richard W. Wright, *Hand, Posner, and the Myth of the "Hand Formula,"* 4 THEORETICAL INQUIRES L. 145 (2003) (arguing that no one, even judges who espouse the Hand formula, actually uses it to resolve negligence cases).

117. Sterk, *supra* note 115, at 1308–11.

that both would-be improvers and courts can reasonably determine what value the owner places on the property and calibrate search costs accordingly.¹¹⁸ Justice Cooley did not suggest that the value of the lumber had anything to do with the level of diligence required of Wetherbee; he simply opined that Wetherbee ought to be allowed a chance to prove his good faith, the implication being that reliance on a license from Summer would qualify as such proof.¹¹⁹ Wetherbee did all that a reasonably diligent person should be expected to—he consulted the applicable public title documents and contacted an owner of record.¹²⁰

In the encroachment cases as well, good faith does not require that one exhaust all available means for ascertaining boundaries. If one is on notice that a potential boundary issue exists—as for example when one builds near the confines of his own property, or when one has actual or record notice of the existence of an easement—one must make a reasonably diligent effort to respect the boundary.¹²¹ Seeking out and relying on information from a source reasonably regarded as authoritative—a lawyer’s opinion, title document, or survey, for example—will tend to establish good faith if an error later becomes apparent.¹²² Our goal here is to weed out deliberate takings without imposing a standard so high that it leads to wasteful search costs or foregone improvement.

While a determination whether the improver acted in good faith is not costless or infallible, 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. As Smith points out, the

118. Sterk’s demonstration that liability rules lead to fewer inefficient searches than property rules assumes that would-be improvers make decisions based on actual knowledge of *H*, an assumption that Sterk acknowledges to be “often unrealistic.” *Id.* at 1318. This does not invalidate Sterk’s conclusion that property rules are likely to lead to inefficient searches that would not take place under a liability regime; it merely means that this fact alone does not call for wholesale abandonment of property rules, as Sterk himself points out. *See id.* The cost of these inefficient searches should properly be entered in the left hand column of our ledger above. *See* discussion *supra* notes 115–17 and accompanying text.

119. *See Wetherbee*, 22 Mich. at 320–21.

120. *Id.* at 312.

121. *See, e.g., Griffin v. Red Run Lodge, Inc.*, 610 F.2d 1198, 1202 (4th Cir. 1979) (noting that to establish innocent obstruction of an easement, a “defendant would have to show it reasonably had no notice of the [plaintiffs’] rights, or that, with knowledge of those rights, it made a good faith effort to locate an [improvement] . . . but strayed . . . because of a good faith error by an independent surveyor as to the boundaries of the easement”).

122. *See, e.g., Stroup v. Codo*, 212 N.E.2d 518, 520 (Ill. App. Ct. 1965) (defendant’s contractor made measurements from stakes at corners of lot shown on plat); *Urban Site Venture II L.P. v. Levering Assocs. L.P.*, 665 A.2d 1062, 1067 (Md. 1995) (defendant relied on survey that contradicted earlier survey); *Dundalk Holding Co. v. Easter*, 137 A.2d 667 (Md. 1958) (defendant relied on surveyor); *Proctor v. Huntington*, 192 P.3d 958, 962 (Wash. Ct. App. 2008) (defendants relied on surveyor’s mistaken identification of boundary marker).

governance rule applied by the accession doctrine is also relatively well-contained in its information requirements.¹²³ When ruling on the law of accession, a court makes a final determination as to ownership of the improved asset and requires a one-time compensatory payment to the party who loses it.¹²⁴ These determinations require only a rough valuation of the improved asset and a determination of whose input made the lesser contribution to its value.¹²⁵

2. *Guarding Subjective Value*

Epstein's Law tells us that a governance regime is likely to systematically undervalue the harm to owners when resources are taken, largely because of the difficulties involved in measuring idiosyncratic and entrepreneurial value. It is noteworthy that in the case of chattel accession—the area where the accession rule was first applied—this concern is absent. This is because the *fait accompli* of the improver's transformative efforts has irrevocably assigned a use to the resource, thus rendering moot whatever allocative preferences or plans the owner might have had and leaving only the question of distribution.

In encroachment cases by contrast, it is generally possible to restore the land to its former potentiality by removing the offending structure. The accession doctrine must therefore include a description of the circumstances under which courts can refuse to order such restoration without undue risk of destroying idiosyncratic or entrepreneurial value. This explains such requirements as those set forth as numbers (2) and (3) in *Wetherbee*—“(2) the damage to the landowner is slight and the benefit of removal equally small” and “(3) there is ample remaining room for a structure suitable for the area and there is no real limitation on the property's future use.”¹²⁶ By requiring that these conditions be met before the court will even consider the question of disproportionate harm to the improver, we reduce the risk of triggering Epstein's Law to tolerable levels.

V. AVOIDANCE COSTS IN NON-POSSESSORY 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 governs rival uses that elude the crude proxy of possession. One way to characterize nuisance cases is that they involve a defendant who is merely attempting to use and enjoy *her own property*, but the manner in which

123. See Smith, *Intellectual Property*, *supra* note 29, at 1770 (describing the “high degree of modularity” promoted by the law of accession).

124. See *id.* (describing the court's function in accession).

125. See *id.* (noting that by “valuing the lesser contribution,” the court is able to identify the contribution more easily valued).

126. *Proctor*, 192 P.3d at 964.

she does so interferes indirectly with the plaintiff's use and enjoyment of his. Alternatively, one could describe the defendant as *using the plaintiff's property* in a way that conflicts with the plaintiff's desired uses. These two characterizations of the problem are economically equivalent, but appear very different on an intuitive level: one is more likely to sympathize with the defendant in the first situation than in the second.

The universe of non-possessory uses can be divided into two categories. The first category contains activities in which the defendant is responsible for the movement of some discrete identifiable physical object that invades the resource in some way, even though the defendant does not physically possess or occupy the resource herself. Examples would include bullets, rocks, or the part of a building that overhangs adjacent property and invades its airspace. Invasions of this kind are generally treated in the same way as possessory uses; they are categorized as trespass and are subjected to a strict exclusion standard.¹²⁷

The second category of non-possessory uses consists of activities that give off no discrete, invading objects, but that nevertheless cause some physical alteration to the qualities of the resource. Examples include smoke, vibration, noise, and odor.¹²⁸ Legally, these types of non-possessory uses fall into the category of nuisance.¹²⁹ The Tennessee Supreme Court case of *Madison v. Ducktown Sulphur, Copper & Iron Co.* provides a paradigmatic example of a non-possessory use that was classified as a nuisance.¹³⁰ In *Madison*, the owners of several small farms situated near two copper ore reduction plants sued the plants' owners for nuisance based on the emission of large volumes of smoke that were destructive both to the farmers' crops and to the health of their families.¹³¹ The court chose to characterize the defendants' activities in the first of the two ways described above, finding that they were conducting their business in good faith and in a lawful manner without any desire to harm the plaintiffs, and that they had made every effort to eliminate the offending smoke.¹³² Noting that the copper plants had spent \$200,000 experimenting to this end, the court concluded that it was not possible to abate the nuisance

127. See Henry E. Smith, *Exclusion & Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965, 993–94 (2004) [hereinafter Smith, *Exclusion & Property Rules*].

128. See *id.* at 999.

129. See *id.* (highlighting courts' willingness to recognize the class of "tangible but non-trespassory invasions" as fitting into the category of nuisance). 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 *infra* note 143 and accompanying text.

130. *Madison v. Ducktown Sulphur, Copper & Iron Co.*, 83 S.W. 658, 659 (Tenn. 1904).

131. *Id.* at 659–60. The *Madison* nuisance falls into the second category of non-possessory uses, because the defendant copper plant owners were responsible for the movement of something that is not a discrete physical object (smoke) that nevertheless altered the qualities of plaintiff's resources (their farms).

132. See *id.* at 660.

without ceasing the plants' operations and declined to issue an injunction.¹³³ Nevertheless, the second description was equally applicable: the defendants were effectively using the plaintiffs' farms as receptacles of airborne waste.

Why do we differentiate between nuisance and trespass? Why not simply use a strict exclusion strategy for both? Under such a rule, the plaintiffs in *Madison* would be entitled to an injunction shutting down the copper plants.¹³⁴ Indeed, under a strict exclusion strategy, plaintiffs 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) when someone trespasses on his property, whether or not the trespass causes damage. The concern raised by such a drastically enforced right to exclude is that landowners would be vested with tremendous veto power over a wide range of uses for any neighboring land. One may avoid trespassing merely by refraining from the use of his neighbor's property; however, like the copper plants in *Madison*, many beneficial uses of one's own property have unavoidable (or avoidable only at enormous cost) spillover effects that vary greatly in duration, magnitude, and effect. There is a far weaker correlation between these spillover effects and actual interference with others' use of their property than there is between trespass and such interference. As a result, nuisance poses a less categorical threat to property owners' expectations of stability in possession and use.

These considerations do not automatically defeat the case for applying strict exclusion to both nuisance and trespass. Remember that the choice between an exclusion strategy and a governance strategy is a choice between two different sets of costs.¹³⁵ The cost of a crude exclusionary strategy is the inefficiency caused when beneficial and non-conflicting uses are prevented by the application of a strict exclusionary rule. On the other hand, the cost of a governance strategy is the inefficiency caused when less valuable conflicting uses displace more valuable ones, to which we must add the expenses of collective allocation, the consequences of undermining property owners' expectations of stable possession, and increased compliance costs. In the context of nuisance, the costs of exclusion threaten to be substantial, while the costs of governance will ultimately depend on the types of governance strategies that are adopted.

133. See *id.* (“[I]f the injunctive relief sought be granted, the defendants will be compelled to stop operations, and their property will become practically worthless . . .”).

134. See *id.* at 660 (reasoning that the strict exclusion remedy of an injunction would force defendants to close their plant, thereby destroying a valuable state industry).

135. See *supra* tbl.A (comparing the costs of maintaining exclusion and governance strategies).

A. The Significant-Harm Rule

While the methods for adjudicating nuisance disputes are various and contested, there is consensus on the basic threshold for actionability: sanctions will only be imposed on the defendant if the plaintiff demonstrates an actual use conflict by showing significant harm.¹³⁶ Only where such harm exists will the court recognize a spillover effect as a nuisance.¹³⁷ Furthermore, because the question of significant harm must be collectively answered, the court necessarily employs an objective standard.¹³⁸ This requirement protects 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. With respect to collective decision-making costs, the significant-harm requirement is fairly easy to administer because it does not call for precise valuations of conflicting uses, only identification of some effect that would be considered a significant detriment under prevailing community standards.¹³⁹ Although 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 seems like a reasonable step in the direction of governance, it must be remembered 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 society has collectively chosen 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—an occurrence that cannot be distinguished empirically from efficient refusals to sell. The choice between the two approaches thus

136. See RESTATEMENT (SECOND) OF TORTS § 821F (1977) (stating that liability for nuisance exists "only to those to whom it causes significant harm"); see also *Madison*, 83 S.W. at 662 (indicating that to succeed on a claim for nuisance, "the injury must be clearly established").

137. Think about what this means if analogized to the realm of possessory conflicts. It is as though *A*, in order to prevent *B* from using his land or chattel (or to recover it from nonconsensual occupation), were required to show that *B* was actually using the property in a way that caused significant harm. It would not be enough for *A* merely to show that *B* was using *A*'s land or chattel without permission.

138. See RESTATEMENT (SECOND) OF TORTS § 821F (stating that 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").

139. *Id.* § 821F cmt. c (explaining that the public nuisance standard of "[s]ignificant harm" is met by showing "particular harm [that] must be significant in character").

cannot be made on quantitative empirical grounds, but only by answering a qualitative value question: which type of error disturbs us more? The significant-harm rule demonstrates that society is more disturbed by holdout than by the failure to protect idiosyncratic uses of property that do not conform to prevailing community standards.

B. Exclusion Versus Governance in Identifying Nuisance

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?¹⁴⁰ The writers of the *Second Restatement of Torts* think the answer is “no,” and have offered a complex set of factors to be weighed in deciding when a significant harm should be treated as a nuisance.¹⁴¹ The Restatement approach to nuisance reflects a strong governance strategy, calling for courts to engage in detailed comparisons of the costs and benefits of the two conflicting uses in light of various values. Notably, the *Restatement* definition of nuisance as “a nontrespassory invasion of another’s interest in the private use and enjoyment of land”¹⁴² leaves open the possibility of nuisances that do not physically alter the plaintiff’s property in any way, such as aesthetic nuisances.¹⁴³ Smith points out, however, that in practice courts often adhere to something much closer to an exclusion strategy than many theorists would like.¹⁴⁴ This trend is revealed in the persistence of locational reasoning in nuisance decisions. Locational reasoning places great weight on the determination of whether spillover effects are in some way emanating *from* defendant’s land to cause physical injury *to* plaintiff’s land. If this is so, and if the harm is significant, then an exclusion strategy dictates that the defendant be liable. Such locational reasoning is irrelevant to Coase, who refuses to label the two conflicting uses as either “offender” or “victim,” but wants only to maximize their total value.¹⁴⁵ Smith argues that this use of locational reasoning in determining initial use entitlements is justified by the

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

141. See RESTATEMENT (SECOND) OF TORTS §§ 822–831 (listing multiple factors to be weighed when determining the gravity of a particular harm at issue). These factors include the following: the utility of the use, whether one use outweighs the other, whether this comparison renders the use unreasonable, whether the invasion of the other’s interest is intentional, and whether all these things put together result in an actionable nuisance. See *id.*

142. RESTATEMENT (SECOND) OF TORTS § 821D.

143. Although “purely aesthetic nuisances” are rarely found to be actionable, some courts have held to the contrary. See Smith, *Exclusion & Property Rules*, *supra* note 127, at 999–1000 n.103 (providing examples of cases granting relief for aesthetic nuisances and recognizing that modern commentators appear to be “favorable to the idea of aesthetic nuisance”).

144. *Id.* at 998–99.

145. See *id.* at 998.

same types of information costs that he discusses in connection with possessory uses.¹⁴⁶

To understand Smith's assertion, let us compare the information costs involved in avoiding conflicting possessory uses with those involved in avoiding conflicting non-possessory uses. 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 that one will need. For example, the hypothetical railroad investors could not credibly claim that their need for *A*'s parcel of land became evident only after they laid all other segments of the track. It is even easier to identify in advance those actions that will infringe upon the possessory rights of others—there is no question that proceeding to lay the track without permission would infringe *A*'s rights.

On the other hand, under the *Restatement* approach to nuisance, while it will often be possible to predict that certain activities are likely to cause spillover effects, the question of whether these will rise to the level of actionable nuisance depends on the relative values of the uses—present or subsequent—of nearby land made by other persons. The existence of a conflict may not be apparent at first; the nuisance may begin as an imperceptible encroachment and only be perceived as an invasion after one of the conflicting uses reaches a certain level of intensity, which may not be evident until after the defendant's use has continued for some time and become economically entrenched. Alternatively, there may not be a conflict until the affected land changes hands, and the new owner makes different use of it. It is thus more difficult for a land owner to avoid the risk that she will find herself embroiled in a nuisance dispute after already committing resources to some productive activity. The facts of *Madison* illustrate this problem.¹⁴⁷ In *Madison*, the court did not give weight to the question of who came first, but it appears that a copper mine had been in the area before the plaintiff-farm owners, although mining operations had been temporarily terminated during the period when the farms were acquired.¹⁴⁸ Once operations were resumed, it was many years before the farm residents brought suit, and during that time, the copper plants had assumed a fundamental economic role in the community—a fact that prompted the court to deny injunctive relief.¹⁴⁹

146. *Id.* at 1000–07.

147. *Madison v. Ducktown Sulphur, Copper & Iron Co.*, 83 S.W. 658 (Tenn. 1904).

148. *See id.* at 659.

149. *Id.* at 659–60 (noting that a period of ten years passed between the operation of the plants and the time the suit was filed). Considering the delay in the plaintiffs' action, the court found that the request for injunctive relief against one of the two defendants was barred by laches. *Id.* at 664. Nevertheless, the court described the potential injunction as though it would stop operation of both copper plants. *Id.* at 661.

The locational approach to nuisance cases identified by Smith reduces—but does not eliminate—the difficulty of complying with one’s duty to avoid non-possessory use conflicts.¹⁵⁰ A landowner seeking to make use of her land still cannot know for sure which spillover effects will interfere with her neighbors’ preferred land uses, but she can—at a minimum—narrow the list of activities giving rise to potential liability to those likely to manifest themselves physically on the property of others. Generally, only chronic generation of some intense physical phenomenon (such as odor, smoke, vibration, or temperature) will produce this type of effect on neighboring lands, which makes risky activities easy to identify.¹⁵¹ It therefore 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. Compared to the *Restatement* nuisance doctrine, the locational approach greatly reduces the costs of allocation, compliance, and enforcement.¹⁵²

C. Accession of Non-possessory Uses: Epstein’s Rule

Even if the locational approach to identifying nuisance is adopted, the question remains 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 economically significant industry, the court held the plaintiffs were entitled to damages alone.¹⁵³ In reaching its result, the court did not deny that the injury to the farmers would qualify as “irreparable harm” or consider the inadequacy of money damages to compensate people for the loss of homes in which they had lived for over twenty years.¹⁵⁴ Instead, the *Madison* court 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.”¹⁵⁵ The combined value of the two plants was nearly \$2,000,000, and an injunction closing the plants would render the property “practically worthless” and drive the copper plants from

150. See Smith, *Exclusion & Property Rules*, *supra* note 127, at 998–1005 (discussing the locational approach to nuisance cases and the resulting reduction in the difficulty in identifying and complying with one’s duty to avoid use conflicts).

151. See *supra* note 128 and accompanying text (discussing Smith’s examples of physical phenomena caused by nuisance).

152. Compare RESTATEMENT (SECOND) OF TORTS § 821D (1977) (“A private nuisance is a nontrespassory invasion of another’s interest in the private use and enjoyment of land.”), with Smith, *Exclusion & Property Rules*, *supra* note 127, at 998–1005 (outlining the locational approach).

153. *Madison*, 83 S.W. at 666–67.

154. See *id.* at 660 (noting that the complainant had lived on and cultivated his farm for twenty or more years).

155. *Id.* at 664.

the state.¹⁵⁶ On the other hand, the court noted that the plaintiffs' farms were all on "thin mountain lands, of little agricultural value,"¹⁵⁷ and that the aggregate value of the tracts was less than \$1,000.¹⁵⁸

The vast difference in the market values of the conflicting uses prompts Epstein to approve the *Madison* court's holding, characterizing it as a case where "even the most modest dollop of property protection could be regarded as excessive."¹⁵⁹ Why? Because "[i]t does not take a Ph.D. in economics to see the holdout danger implicit in [such a] case."¹⁶⁰ 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."¹⁶¹ This rule of thumb—which this Article will refer to as "Epstein's Rule"¹⁶²—has a number of implications that require unpacking.

First, should the "relative balance of convenience"¹⁶³ be determined solely by the relative market values of the two conflicting uses of plaintiffs' land? If so, then both idiosyncratic and entrepreneurial value are thrown out the window from the beginning. 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 \$2,000,000 (but that will be harmed or prevented by the pollution), then applying Epstein's Rule leads to an inefficient result. Again, there exist no empirical means by which to compare these efficiency losses to those Epstein fears will result from strategic holdout.

Second, Epstein's Law tells us that seeking to avoid holdout by applying liability rules will result in systematic undercompensation of plaintiffs and inflict consequential damages.¹⁶⁴ If the owners of the *Madison* copper plants had attempted to purchase the farmers' land before they began operating, 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 plant owners' intended use of the land was believed to have a much higher market value than the farms. Why then is Epstein willing to allow the plants to take the right to use the land physically (albeit non-possessorily)

156. *Id.* at 660, 666–67.

157. *Id.* at 659.

158. *Id.* at 666.

159. Epstein, *A Clear View*, *supra* note 18, at 2102; *see also Madison*, 83 S.W. at 667 (awarding damages—instead of an injunction—to the plaintiff-farm owners in order to preserve the valuable copper mines operated by defendants).

160. Epstein, *A Clear View*, *supra* note 18, at 2102.

161. *Id.*

162. Epstein's Rule, of course, is not to be confused with Epstein's Law. *See supra* notes 57–58 and accompanying text (explaining Epstein's Law).

163. *See Epstein, A Clear View*, *supra* note 18, at 2102.

164. *See supra* note 60 and accompanying text.

through the backdoor means of making a significant amount of money by doing so? Does not this form of taking open the door to rampant opportunism, making Epstein's Rule run afoul of Epstein's Law?

Epstein's Rule looks a lot like another application of the accession doctrine.¹⁶⁵ Again 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 analogy is closer to encroachment than to chattel accession, because here too it is possible to restore the taken property to its prior condition by discontinuing the nuisance. As in encroachment cases, a court asked to enjoin a nuisance whose value apparently outweighs that of the harm is being asked not merely to redistribute value, but to destroy it. This makes accession look like an attractive option. Instead of acquiring a right to continued possession of a chattel or an improved piece of land, here the defendant would acquire through accession a privilege of continuing to make non-possessory use of the plaintiff's land. This solution is only desirable, however, if the inefficient dynamic consequences of relaxing property rules can be kept to tolerable levels.

1. The Good-Faith Requirement in Nuisance

This brings us to the question of good faith. We have seen that to avoid encouraging opportunism, the possessory accession doctrine requires the defendant to show that she reasonably believed she was not violating anyone's property rights when she took and transformed the resource.¹⁶⁶ Such a belief might come, for example, from a reasonable but mistaken perception as to legal title or the locations of boundary lines.

In the context of nuisance, good faith might analogously be understood to mean that when the defendant invested in the enterprise 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. The court did not rule that the defendants had believed there would be no harm to plaintiffs. 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 eliminate the smoke, but could not do so without permanently halting the plants' operations.¹⁶⁷ Thus, the only form of good faith required by Epstein's Rule is that the nuisance be an unavoidable side effect of the surplus-producing activity. So long as the taker seeks to minimize the spillover effects resulting from her own legitimate productive activities, her foreknowledge of those effects will not put her in bad faith. This

165. See *supra* Part IV.B (discussing the law of accession).

166. See *supra* Part IV.B.

167. See *Madison v. Ducktown Sulphur, Copper & Iron Co.*, 83 S.W. 658, 660 (Tenn. 1904).

is a more lenient standard than that for possessory accession, where knowing violation of the boundary line renders one ineligible for relief no matter how great the disparity of hardship.¹⁶⁸

Epstein's Rule is also far less solicitous of idiosyncratic and entrepreneurial value than is the encroachment doctrine. Recall that the rule in *Proctor* says that no comparison of hardships will occur unless the damage to the landowner is "slight" and "there is no real limitation on the property's future use."¹⁶⁹ In *Madison*, by contrast, the defendants won even though the plaintiffs' land had been rendered virtually uninhabitable.¹⁷⁰ On both counts, then, Epstein's Rule is a far less guarded departure from strict property rules than the doctrines governing possessory accession.

2. *Opportunism and Ex Ante Avoidance Costs*

One way to justify Epstein's relaxation of 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 more evenly counterbalanced by that of opportunism by owners wielding property rules. To deliberately engineer a position of possessory holdout, *A* must 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 only purchase land in the vicinity of some existing lucrative enterprise that creates spillover effects. It is true, however, that *B* can seek to preempt such opportunism by purchasing, or negotiating equitable covenants over, any parcels foreseeably affected. Smith differs from Epstein by suggesting that the law should incentivize *B* to do exactly that by refusing later to defuse holdout with liability rules.¹⁷¹ Who is right?

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 stems from two unknowns: (1) the precise incidence and magnitude of future spillover effects, and (2) the future uses of neighboring land. To this must be added a third source of uncertainty: the unknowable outcome of any future nuisance dispute should numbers (1) and (2) conflict. To decide what rights she needs to purchase *ex ante*, someone wishing to make productive use of her land must prognosticate on all three fronts. If her predictions on any one of the three are

168. See Warden, *supra* note 105, at 705–09 (“Where an encroachment by an adjoining landowner is intentional or wilful, a mandatory injunction will ordinarily be granted to compel its removal, without regard for the relative conveniences or hardships which may result from ordering its removal.”).

169. *Proctor v. Huntington*, 192 P.3d 958, 964 (Wash. Ct. App. 2008).

170. *Madison*, 83 S.W. at 666–67.

171. See Smith, *Exclusion & Property Rules*, *supra* note 127, at 1043 (advocating for a technique that “refus[es] a blanket after-the-fact . . . liability rule approach”).

incorrect, much of the money spent purchasing rights (and the associated transaction costs) will be wasted, either because she has purchased rights that do not sufficiently protect her activities from holdout, or because she has purchased rights that are unnecessary to her use of the land. The only certain way to avoid nuisance *ex ante* is to avoid any activities likely to create spillover effects, which would drastically reduce the number of productive uses to which the land could be put.

It was argued above that in the case of possessory holdout, it is probably wasteful to proceed making productive investments without first obtaining rights to a needed resource, both because such investments do not generate information about which use has higher value, and because the investments themselves are wasted if the resource is ultimately allocated elsewhere.¹⁷² The nuisance scenario looks rather different in this regard. First, 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 manifests itself. 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. In addition, in contrast to foreseeable possessory conflicts that 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. As a result, when gauging the information costs of failing to secure rights to non-possessory uses *ex ante*, we must consider the possibility that they will be 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 before any final allocation decision, we might conclude that in many cases such an owner would proceed in just this way, experimenting simultaneously with potentially conflicting uses to determine their relative values and practical compatibility. Holding people strictly liable for their failure to avoid nuisance liability through *ex ante* negotiation may not be worthwhile.

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 narrower than it appears. In order to take advantage of Epstein's Rule, a taker must 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 devoting his land. If *A* is vigilant, he can probably stop *B* from reaching this

172. See *supra* Part III.A.

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.¹⁷³

Epstein explains that his rule is intended to prevent inefficiency that could result from allowing "useful transactions [to] be blocked by a wide range of strategic behavior[]." ¹⁷⁴ As there is no way of knowing how much idiosyncratic and entrepreneurial value are sacrificed, however, the claim that this rule is more efficient cannot be substantiated by either empirical measurement or economic reasoning. The rule may be more persuasively explained as preventing 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 injunctions to disputes 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 idea that the right to exclude should be used only to shield from interference one's own present or future productive uses of a resource. This norm is generally not enforced, because it is too expensive 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 a dispute; (2) it is not clear that refraining from non-possessory uses until one has negotiated rights for those uses is either feasible or desirable; and (3) enforcing strict property rules would destroy value rather than redistribute it.

VI. AVOIDANCE COSTS IN INTELLECTUAL PROPERTY

How well do the arguments for exclusion in tangible property transfer to the realm of intellectual property? Smith argues that "the problems of delineation costs are not fundamentally different from those prevailing in property generally."¹⁷⁵ Smith's first example is a patent covering a mechanical apparatus, which is a physical thing and thus has boundaries like any other

173. See, e.g., *Iglesias v. Mut. Life Ins. Co.*, 156 F.3d 237, 243 (1st Cir. 1998) ("The equitable doctrine of laches allows a court to dismiss a claim 'where a party's delay in bringing suit was (1) unreasonable, and (2) resulted in prejudice to the opposing party.'" (quoting *K-Mart Corp. v. Oriental Plaza, Inc.*, 875 F.2d 907, 911 (1st Cir. 1989))).

174. Epstein, *A Clear View*, *supra* note 18, at 2094.

175. Smith, *Intellectual Property*, *supra* note 29, at 1795.

physical thing.¹⁷⁶ From there the analysis progresses to patentable “things” that are somewhat less concrete, such as chemical compounds, and then on to industrial processes and business methods, which are not things at all but lists of uses.¹⁷⁷ 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.”¹⁷⁸ Smith labels this an issue of “substantive breadth”—or the scope of the “thing” being treated as property—and contrasts it with the issue of “functional breadth”—or the number of ways of interacting with that “thing” that the owner is given the right to prohibit. Smith suggests that while there may be a valid concern about substantive breadth with regard to certain types of patents, the functional breadth of patent law is justified because it reduces information costs in allocation and rulemaking, preventing courts from evaluating uses or relative deservingness of owners and infringers.¹⁷⁹

Smith’s discussion understates the extent to which an exclusion regime in intellectual property not only differs from the underlying exclusion regime used for tangible resources, but also directly conflicts with it. This is because any system of IP rights amounts to a governance regime of use rights for tangible resources—one that imposes all of the same costs identified by Smith in his general analysis of governance regimes.¹⁸⁰ In evaluating the choice between exclusion and governance in the IP realm, we must consider the possibility that accepting certain governance costs in the IP context may ameliorate some of the disruption caused by intellectual property in the tangible-property context.

A. Intellectual Property and Numerus Clausus

Consider Smith’s simplest example: a patented mechanical apparatus.¹⁸¹ 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 certain 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 to avoid appropriating or coming into contact with any particular physical objects, whether possessed by the patent owner or anyone else. This means that regardless of how “concrete” the conceptual

176. *Id.* (noting that in early U.S. patent law, patents were mainly granted to inventions “embodied in some apparatus, a physical thing”).

177. *See id.* at 1795–96.

178. *Id.* at 1796.

179. *Id.* at 1796–97.

180. *See, e.g., id.* at 1785 (asserting that governance strategies isolate “uses and users in more detail,” and thus impose higher informational costs).

181. *See id.* at 1795.

“boundaries” in the patent are, those boundaries do not (as they do for tangible property) serve as crude proxies that obviate the need to identify and evaluate 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 is able to determine whether or not actions transgress the “boundaries” of the patent.¹⁸² This is as true of the patented machine as 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 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.

Indeed, when translated into their practical effects on the tangible property rights of others, IP rights can be seen to constitute a radical departure from the traditional principle of *numerus clausus*.¹⁸³ IP rights amount to a form of a negative easement—a restriction on the uses owners can make of their tangible property.¹⁸⁴ 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.¹⁸⁵ These limitations protected a specific tract of adjacent property, making negative easements appurtenant by their nature.¹⁸⁶ For the most part, the refusal of the common law to enforce negative easements in gross against subsequent owners of land has survived to the present day; while the *Third Restatement of Property* abandons this

182. See generally JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK* 46–72 (2008) (discussing the difficulty of discerning patent boundaries).

183. For a discussion of the *numerus clausus* principle as applied to property law—that similar to rights in civil law, “property rights must conform to certain standardized forms”—see Merrill & Smith, *supra* note 86, at 4.

184. See JON W. BRUCE & JAMES W. ELY, JR., *THE LAW OF EASEMENTS AND LICENSES IN LAND* § 2:10 (2009) (“[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.”).

185. See Susan F. French, *Toward a Modern Law of Servitudes: Reweaving the Ancient Strands*, 55 S. CAL. L. REV. 1261, 1267 (1982) (observing traditional types of negative easements that were recognized at common law); see also *United States v. Blackman*, 613 S.E.2d 442, 446 (Va. 2005) (“The traditional negative easements recognized at common law were those created to protect the flow of air, light, and artificial streams of water, and to ensure the subjacent and lateral support of buildings or land.”).

186. See BRUCE & ELY, *supra* note 184, at § 2:10 (“A negative easement does not permit the holder to enter or use the servient estate; it limits the right of the servient owner to utilize the servient owner’s own land. Historically a negative easement was considered appurtenant.”); see also *Blackman*, 613 S.E.2d at 446 (explaining that negative easements “are, by their nature, easements appurtenant, as their intent is to benefit an adjoining or nearby parcel of land”).

restriction,¹⁸⁷ the recent innovation of conservation easements generally required specific legislation to make them enforceable.¹⁸⁸ In practice, IP rights are negative easements in gross that are not limited to real property and that can be used to restrict an extremely broad range of uses. Once acquired, they make servient estates of every chattel and every person within the territorial reach of the law. These rights are freely transferable, and there are no requirements 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.

Smith and Merrill have argued that the *numerus clausus* principle is important from an economic perspective because the 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 the rights of others.¹⁸⁹ Smith and Merrill recognize that this principle is at its “weakest” in the area of intellectual property, but they attribute this weakness solely to the common law’s occasional innovation in creating new doctrines, such as misappropriation or right of publicity.¹⁹⁰ With regard to patent or copyright law, Smith treats the statutory enumeration of limited lists of exclusive

187. See RESTATEMENT (THIRD) OF PROPERTY: SERVITUDES § 2.6(2) (1998) (“The benefit of a servitude may be granted to a person who is not a party to the transaction that creates the servitude.”).

188. See, e.g., *Brace v. United States*, 72 Fed. Cl. 337, 364 (Fed. Cl. 2006), *aff’d*, 250 Fed. App’x 359 (Fed. Cir. 2007) (noting that forty-seven states have enacted legislation allowing for conservation easements because “the equitable enforcement” of negative easements in gross was prohibited). For a general description of the “uncertainty and difficulties” inherent in the creation of enforceable conservation easements under traditional common law rules that negative easements could not be transferred, see RESTATEMENT (THIRD) OF PROPERTY: SERVITUDES § 1.6 cmt. a. As a result, there was “widespread enactment of statutes” to overcome the problematic common law rules, and in 1981, the Uniform Conservation Easement Act was announced. *Id.*; see also *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.”). See generally JESSE DUKEMINIER & JAMES E. KRIER, PROPERTY 855–57 (5th ed. 2002) (outlining the history of restrictions on negative easements in England that were later adopted by U.S. courts); 4 RICHARD R. POWELL, POWELL ON REAL PROPERTY § 34.16 (Michael Allan Wolf ed., Matthew Bender & Co. 2009) (1949) (detailing the 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) (noting that where the benefit of an easement is held in gross, some courts do not allow the burden to run with the land).

189. See Merrill & Smith, *supra* note 86, at 23–24.

190. *Id.* at 19–20.

rights¹⁹¹ as substantially satisfying the *numerus clausus* principle.¹⁹² 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 with which one could simply avoid contact.¹⁹³ 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—in some cases, hundreds—of complex claims, and the total number of issued patents currently in force is roughly 1.8 million.¹⁹⁴ 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.¹⁹⁵ Further, an IP search is far more open-ended given that the search for patents cannot be limited to rights affecting a specific piece of land or chattel.¹⁹⁶

One might argue that the information costs involved in intellectual property are lower, because the imposed duties apply to all personal property equally, whereas the problem created by innovative forms of property entails drawing a distinction between chattels that can be purchased in fee simple and those that may be subject to some fanciful servitude.¹⁹⁷ In addition, intellectual property is of limited duration, whereas ordinary property rights continue in force until they are terminated by someone having the power to do so. Although these factors distinguish the information costs imposed by intellectual property from those caused by proliferation in the forms of tangible property rights, they do

191. See 17 U.S.C. § 106 (2006) (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); 35 U.S.C. § 271(a) (2006) (defining patent infringement as “mak[ing], us[ing], offer[ing] to sell, or sell[ing] any patented invention” without authorization).

192. Smith, *Intellectual Property*, *supra* note 29, at 1780; see also *infra* note 238 and accompanying text.

193. See 35 U.S.C. § 271(a); Smith, *Intellectual Property*, *supra* note 29, at 1795.

194. This rough calculation is based on information from the U.S. Patent Office concerning the numbers of patents issued per year from 1991 to 2007. See U.S. Patent Statistics Chart: Calendar Years 1963–2007, available at http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm. It assumes that maintenance fees on patents of various ages are paid the same percentage of the time that they were in 1998. See also Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1504 (2001) (recording the “[p]ercentage of [p]atents for [w]hich [m]aintenance [f]ees [w]ere [p]aid” in 1998).

195. See BESSEN & MEURER, *supra* note 182, at 51–68 (comparing the levels of difficulty for running a land title search with that of running a patent search); cf. Merrill & Smith, *supra* note 86, at 44–45 (arguing that notice of idiosyncratic property rights, even if given through a centralized land register, is insufficient to restrict the information costs on third parties to justifiable levels).

196. See BESSEN & MEURER, *supra* note 182, at 68–71 (discussing the “[p]atent [f]lood” and observing that “firms are [often] sued over patents covering distant technologies”).

197. See Merrill & Smith, *supra* note 86, at 27–33 (discussing problems that would be inherent in the creation of a “fanciful” servitude—for example, by creating a time-share in a watch).

not support a conclusion that the former are less burdensome.¹⁹⁸ Assuming there is a recording requirement, purchasers of land and chattels could assure themselves once—at the time of purchase—of the universe of idiosyncratic limitations on their use and transfer rights because they would take title free of any limitations not previously recorded. With intellectual property, on the other hand, owners of tangible property must incur new search costs each 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, given that old IP rights expire and new ones are created without notice to the people whose property is affected.¹⁹⁹

B. Undercompensation in the Acquisition of IP Rights

Once intellectual property is conceptualized as a governance regime allocating use rights to tangible resources, the process of obtaining a patent can be envisioned 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.²⁰⁰ Does Epstein's Law apply to this liability regime? In patent law, the price paid by the patentee consists of the disclosure of information.²⁰¹ The patent applicant describes the scope of the use privileges she wishes to appropriate, the United States Patent and Trademark Office determines whether the information offered in exchange for these privileges is sufficiently valuable to compensate the public for the appropriation.²⁰² The primary requirements that guide this determination are novelty,²⁰³ utility,²⁰⁴ enablement,²⁰⁵ and obviousness.²⁰⁶ According to Smith's analysis, undercompensation should be expected primarily in cases where takers are better informed of potential uses than public decision-makers, but

198. See BESSEN & MEURER, *supra* note 182, at 68–71 (discussing the various information costs caused by proliferation of IP rights in patent law).

199. See *id.*

200. Again, a patentee is appropriating use *privileges* from their prior owners. This vests in her—the patentee—in the form of *use rights*—that is, the right to exclude others from these uses. Although the patentee has taken away the others' 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.

201. See 35 U.S.C. § 112 (2006) (requiring that patent applicants provide specifications that include “a written description of the invention” sufficient “to enable any person skilled in the art . . . to make and use [it],” as well as a description of “the best mode contemplated by the inventor of carrying out his invention”).

202. See 35 U.S.C. § 112 (describing the requirements for the specifications portion of the patent application).

203. 35 U.S.C. § 102 (setting forth the novelty requirements).

204. 35 U.S.C. § 101 (providing that the invention must be “new and useful”).

205. 35 U.S.C. § 112 (mandating that an inventor include specifications in enough detail to enable a person of ordinary skill in the art to build the invention).

206. 35 U.S.C. § 103 (setting forth the requirements for non-obvious subject matter).

less informed than current owners.²⁰⁷ Here, the current owner is 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 claimed use privileges differently.

With regard to any given claimed invention, it is likely 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 of whether they have received adequate compensation collapses to the overall question of whether the patent system is efficient as a whole—that is, whether the value conferred on the public by inventions that would not have been disclosed in the absence of patent protection outweighs the increase in prices that results from restricting competition and 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 relevant 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 would not have discovered the invention during the patent period if the patentee's disclosure had not brought it to their attention. These owners receive adequate compensation, because the practical value of use privileges taken from them by the patentee would be zero if not for the disclosure of the information. Now that they know of the invention, they can bargain for rights to use it during the patent term, and will be able to do so freely after the patent term ends. We can posit another subclass of owners, however, who *did* discover the invention on their own.²⁰⁸ To these owners, the information contained in the patent disclosure is probably worthless, while the use rights that they have lost are valuable, leading to systematic undercompensation.²⁰⁹ 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 value 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 crucially depends on the price and the extent to 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

207. See Smith, *Property Rules*, *supra* note 18, at 1781–83 (explaining that a “taker will be able to pick out a class of assets that has a higher mean value than the one that the courts have identified, and courts cannot cost-effectively keep up”).

208. An example of this type of owner is someone who discovered the invention independently of—but subsequent to—the patentee and discovery, 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) (stating that such independent discovery and use would not invalidate that patent).

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

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 who are not granted any license at all—are undercompensated.

Note that much of the undercompensation to these privilege holders can be characterized as lost entrepreneurial value. At the time the taking is initiated—that is, 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—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 presently offering, without the benefit of 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 about which the applicant is likely to have better information than the Patent Office, even 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 requiring that the obviousness of an invention be evaluated “at the time the invention was made.”²¹⁰ 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 at the time the exchange is made, as it may well have diminished since it was first generated. In effect, this provision is similar 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.²¹¹

The taking of use privileges to owners' assets through patent applications is not as radically disruptive to expectation stability as a regime allowing possessory appropriation of those assets would be. It is still, however, 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 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

210. 35 U.S.C. § 103(a).

211. The rationale here may be valid: 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.

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: both situations increase 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 IP rights to the doctrine of accession.²¹² 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.”²¹³ Having mixed her labor (and other rival inputs) with this substratum, the inventor creates a useful work to which IP law then allows her to take title.²¹⁴ The analogy is an uneasy one. The key factor in the accession doctrine is that the property taken has been indissolubly mixed with the improver’s labor, so that it is impossible to return it and put the owner back in his original position without destroying the value created by the improver.²¹⁵ The actions of an inventor, however, do not consume information or public use privileges in this way; to the contrary, it is only the extraordinary intervention of IP law that *prevents* 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, because 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 rather the disclosure of information enabling others to make better use of them. In chattel accession, the enhanced value of the taken property is a *fait accompli* prior to the payment of any compensation. In discussing intellectual property however, Smith treats the disclosure of information to the public as the compensation, not as the act giving rise to the accession problem in the first place.²¹⁶ This elision masks another option available to the inventor: she can keep the information to herself, just as the homeowner can build her own wall if she wishes to forestall the gratuitous aesthetic enrichment of neighbors. Like

212. See generally Smith, *Intellectual Property*, *supra* note 29, at 1766–77 (exploring “[r]ights in [i]nformation [t]hrough the [l]ens of [a]ccession [l]aw”).

213. *Id.* at 1771.

214. *Id.*

215. See, e.g., *Wetherbee v. Green*, 22 Mich. 311, 318–20 (1871) (discussing the operation of the law when property is improved and unable to be divided).

216. Smith, *Intellectual Property*, *supra* note 29, at 1771.

the homeowner—and *unlike* the encroacher or polluting factory—the inventor has no need to appropriate anyone else’s use privileges (and violate their rights to exclude) in order to enjoy the direct benefits of her labor in the form of value-enhanced use privileges to her own tangible property. Any claim of distributive injustice, then, must be based not on some deprivation suffered by the inventor, but on a theory—for which there is no straightforward common law basis—that the benefits conferred on others give her a right to compensation.²¹⁷ When IP law gives the inventor a right to exclude, it does so not to prevent an injustice but to offer a reward.

Despite his detailed discussion of the accession doctrine and its modular qualities, Smith does not discuss whether this same doctrine could be used to provide limits on the patent owner’s right to exclude.²¹⁸ Although accession is problematic as an analogy for the original acquisition of IP rights, it bears obvious similarity to the problem of the infringing improver at issue in *eBay*. In such cases, we have an improver who has created a surplus of value by taking a patented invention and investing rival inputs of her own.²¹⁹ As with nuisance, the analogy is imperfect, because nothing prevents the return of the patent 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 would destroy the value created by the improver.

Consider the example used by Lemley and Weiser of a complex product containing an infringing component.²²⁰ Say *B* designs and builds a computer containing a single chip that is found to infringe *A*’s patent. The first question is whether, and to what extent, the chip is indissolubly mixed with *B*’s computer. There are two possibilities: either the computer’s design is such that a different, noninfringing chip would not allow it to function, or a different, noninfringing chip could be used, but irreversible investments make it a practical impossibility to substitute a different chip in enough time to realize the surplus. Either way, if *B* is enjoined from making or selling her product as it is, a significant amount of value will be destroyed and investment wasted.

To apply the accession rule we must judge the relative contributions of the patented invention and the improver’s rival inputs to the value of the overall

217. See Gordon, *supra* note 51.

218. See generally Smith, *Intellectual Property*, *supra* note 29, at 1766–77 (offering a comparison of IP rights to the law of accession).

219. See *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 390–91 (2006) (noting that the petitioner, eBay, invested resources to operate a popular website that was accused of infringing a patent held by another company).

220. See Lemley & Weiser, *supra* note 10, at 797–98 (“As a striking example, literally thousands of patents have been identified as essential to the proposed new standards for 3G cellular telephone systems, and more than four hundred patents are necessary to produce a DVD.” (citations omitted)).

product at issue. This is an extremely difficult problem, given that there are probably many components that are each but-for causes of the product's ability to function 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 simply be unsolvable.²²¹ Of course, the same is true even in the realm of normal chattel accession. In *Wetherbee*, the court did 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 derived from the material from which they were made.²²² Instead, the value of the timber in its original form was subtracted from the value of the finished hoops and what was left was attributed to the improver's input.²²³ This can be done in chattel accession cases because the appropriated chattel tends to be something fungible for which there is a readily determined market price.²²⁴ The problem in patent cases is that a patented invention is generally *not* a fungible commodity, both because it must bear some novel characteristic in order to be patented, and because it cannot be freely manufactured and commonly sold. Moreover, unlike tangible resources that are generally sold *in toto* by transferring possession (and all potential use rights), intellectual property is usually licensed on a use-by-use basis.²²⁵ 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 idiosyncratic²²⁶—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, we have no reliable basis on which to evaluate the relative contribution of the infringing component to the product's value. In such cases, the manifest distributive injustice needed to invoke the accession rule is necessarily absent, leaving exclusion as the presumptive default response.

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

222. *Wetherbee v. Green*, 22 Mich. 311, 312 (1871).

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

224. See, e.g., *Wetherbee*, 22 Mich. at 318, 320 (discussing the appropriated chattel in this case, which was cut timber).

225. See, e.g., *S.O.S., Inc. v. Payday, Inc.*, 886 F.2d 1081, 1088 (9th Cir. 1989) (concluding that “copyright licenses are assumed to prohibit any use not authorized”).

226. For example, the consideration may consist of not only money but also of the cross-licensing of the licensee's own intellectual property.

On the other hand, if a noninfringing chip *would* allow the product to function, then there may be a wider market for chips featuring the characteristics required by the product. As a result, it may be possible to determine the going value of such a chip if one bargained 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 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 when a noninfringing substitute does not exist, the patentee, in some instances, may have licensed to similarly situated improvers frequently enough to permit a meaningful determination of 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, one must ask the same questions 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 good-faith requirement should be imposed on takers to enable 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 inherent and significant limits on the extent to which it can be used by opportunistic takers. First, the accession rule can only be applied in situations in which there is a readily determined market price for the use in question.²²⁷ This means that when 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 will prevent takers from appropriating those uses under cover of the liability rule. Second, there is the indissolubility requirement of the accession doctrine, which is embodied in the nuisance context by the good-faith requirement that one

227. It is necessary to discern a market price for the use at issue, otherwise the calculation of damages would be impractical. *See, e.g.,* Arnold, *supra* note 95, at 112–13 (noting that in applying the accession doctrine, damages are measured according to the “value of the article in its improved state”).

minimize one's spillover effects to the minimum level compatible with creation of the surplus. In the patent context, 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 accession rule would only lead to the denial of an injunction if the value added to the product by the improver is vastly greater than that of the patented use.²²⁸ 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. As noted above, patent applicants are likely to have an information advantage over the Patent Office, enabling them to take undervalued use privileges from people who developed—or could have developed—the information on their own.²²⁹ 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 viewed as balancing out the earlier denial of property rule protection to those privilege holders who would not have voluntarily relinquished 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? As discussed above, when it comes to possessory use of tangible property, good faith requires that the improver have an objectively reasonable basis for believing that her actions do not transgress the boundaries of the owner's property. Nuisance, on the other hand, requires 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.²³⁰ These differing burdens correspond to differing avoidance costs and differing extents to which proceeding with productive investment in the face of uncertain rights may generate information relevant to use allocation.

This Article has already argued that the avoidance costs associated with patent law are substantial.²³¹ Because one can infringe patent rights without any deliberate copying, ex ante avoidance of infringement requires costly steps

228. In the context of the accession rule, courts will likely favor the improver when the improved value is higher than that of the original article. *See, e.g., Wetherbee*, 22 Mich. at 320.

229. *See supra* Part VI.B.

230. *See, e.g., Madison v. Ducktown Sulphur, Copper & Iron Co.*, 83 S.W. 658, 662 (Tenn. 1904) (determining that courts may give deference to the creator of the nuisance when the nuisance is a legal trade operating in good faith).

231. *See supra* Part VI–VI.A.

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, significant room remains for reasonable disagreement as to the scope of the claims in a particular patent and whether those claims read on one's contemplated activities.²³² This uncertainty will be greater the further the project is from fruition, because whether or not a contemplated use ultimately infringes a patent claim will often depend on very specific details of the manner in which it is implemented—details that cannot be predicted in the abstract and whose legal significance is not always apparent on a facial reading of the patent claims.²³³ Just as proceeding with productive investments in a potential nuisance scenario generates information about 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 generates information relevant to the question of whether one's activities actually infringe potentially applicable patent claims.

Another source of ex ante uncertainty is the question of whether a given patent potentially covering one's contemplated activities is valid. This situation is analogous to the uncertainty in nuisance cases as to whether a given spillover effect will be held to constitute a nuisance. Patent applicants inherently enjoy informational advantages over the Patent Office, and because of this, many patents are issued whose validity cannot withstand the scrutiny brought to bear by an interested party in litigation.²³⁴ Indeed, studies show that nearly half of all litigated patents are eventually ruled invalid.²³⁵ This means

232. See David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 240, 251–52 (2008) (studying appealed cases where the trial court was found to have wrongly construed at least one patent term, which occurs 38.8% of the time, and noting that this rate does not improve with the level of patent experience of the trial court).

233. See *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326–27 (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*, in MARKMAN HEARINGS AND CLAIM CONSTRUCTION IN PATENT LITIGATION 2008, at 65, 71 (Thomas L. Creel 2008) (discussing the chronic inability of judges to consistently “construe highly abstruse patent claims cloaked with technical jargon,” despite their presumed exegetical skills).

234. See *supra* Part VI.B; see also, e.g., *Agrizap, Inc. v. Woodstream Corp.*, 520 F.3d 1337, 1339 (Fed. Cir. 2008) (concluding that Agrizap's patent for a device to kill rodents was invalid due to obviousness).

235. John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 194, 205 (1998) (finding that from 1989 to 1996, forty-six percent of “final validity decisions by either district courts or the Federal Circuit reported in the *U.S.P.Q.*” found the patent at issue to be invalid); see BESSEN & MEURER, *supra* note 182, at 277

that the mere fact that a patent was issued is a poor proxy for validity. The only way for an improver to truly ascertain whether a conflicting patent is valid is to invest several million dollars in litigation.²³⁶ 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.²³⁷ Application of the single-owner test suggests that it is wasteful to require improvers to form strong beliefs about patent validity in order to satisfy the good-faith requirement. 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 if she thought it would inefficiently interfere with her primary plans for commercialization of the patented invention. She would *not*, however, spend large sums trying to ascertain whether the improvement really infringed the claims in her patent. That information has no relevance for the determination of how resources should be allocated.

Even assuming the patent owner's preferred plans for commercializing her invention to have entrepreneurial value, the accession doctrine developed here enables her to protect that value by refusing to grant any non-exclusive licenses. As noted above, the absence of a transparent market for the patented uses will preclude the evaluation of relative values needed to apply Epstein's Rule. Accordingly, there is no need to guard against this type of inefficiency by imposing an additional good-faith requirement on improvers. Where the disparity in value between the infringed patent rights and the improvement is ascertainably disproportionate, the improver should be treated like the creator of a socially productive nuisance, and not be enjoined simply because the likelihood of infringement was foreseeable.

3. *Distinguishing Between Willfulness and Bad Faith*

One cogent objection to this conclusion is that 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. Takers can then force the patentee to accept this license rate, as long as they plan to add enough input of their own to pass muster under the accession rule. After this type of taking becomes widespread, the "established" market price that served to justify it will become fossilized and will cease to be an accurate

(explaining that although the Patent Office provides a reexamination procedure, firms are often hesitant to use it because it "places firms at a disadvantage if subsequent litigation occurs").

236. See also BESSEN & MEURER, *supra* note 182, at 131–32 for a discussion of the costs of litigation, showing that estimated legal costs of litigating patent suits through trial range from \$610,000 to \$4.14 million, depending on the amount of damages at stake.

237. See Lemley & Shapiro, *supra* note 3, at 2032–33 ("The average royalty rate granted in all reasonable-royalty cases is 13.13% of the price of the infringing product.").

reflection of the patented use's value.²³⁸ 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, albeit imperfectly, without giving the patentee full holdout power: the rule that damages may be trebled for willful infringement.²³⁹

The statute itself only gives courts the power to increase damages up to three times. It does not specify the type of conduct that should trigger this penalty.²⁴⁰ Until recently, there was no duty to search the Patent Office before making productive investments, but once one received actual notice that a planned activity fell within an area protected by someone's patent, "an affirmative duty to exercise due care to avoid infringement"²⁴¹ was triggered. This affirmative duty required one to seek and find 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,"²⁴² otherwise the infringement could be ruled willful.²⁴³ The United States Court of Appeals for the Federal Circuit recently abandoned this rule, holding that infringement is willful only if the infringer acted recklessly—in spite of "an objectively high likelihood that its actions constituted infringement of a valid patent."²⁴⁴ The Federal Circuit further clarified that this "objectively high likelihood" must have been "either known or so obvious that it should have been known to the accused infringer."²⁴⁵

By relieving improvers of the affirmative duty of due care,²⁴⁶ the Federal Circuit's new standard for willfulness reduces the burden of the avoidance costs whose utility was called into question above. Nevertheless, in cases where an objectively high likelihood exists that the improver's actions constitute infringement, the willfulness doctrine provides a strong incentive to negotiate with patent owners. This mechanism serves to protect the integrity of the market signals used by the system to determine the value of patent rights. When combined with the accession rule, the willfulness doctrine can

238. 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 in the context of "cover" songs).

239. See 35 U.S.C. § 284 (2006).

240. *Id.* (noting only that damages should be "adequate to compensate for the infringement").

241. *SRI Int'l, Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1464 (Fed. Cir. 1997).

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

243. The willfulness standard, in other words, was congruous to the standard for innocent encroachment.

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

245. *Id.*

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

also be viewed as limiting the size of holdout premiums to three times market value. This salutary effect only works, however, if courts avoid the mistake of assuming that a finding of willfulness for the purpose of assessing damages gives the infringer “unclean hands” so as to preclude the equitable decision to withhold an injunction in accordance with the accession rule.

For example, assume the 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 come to the manufacturer’s attention (though not because of any deliberate delay by the patent owner) and that, following investigation, the manufacturer finds no basis to doubt that the asserted patent is valid, enforceable, and infringed by the component chip. It is too late, however, for the manufacturer to work around the patent in this first product cycle without incurring catastrophic losses. Suppose also that the patent has previously been licensed for similar uses for a small fraction of the value of the manufacturer’s entire computer. If this dispute 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 patent’s normal market value, plus the anticipated costs of litigation. If the accession rule is applied, that is the most value that the patent owner can extract. If the same willfulness standard used for punitive damages also determines eligibility for the accession rule, however, the patent owner can extract the full holdout premium. This violates our criterion of distributive justice and does so without promoting efficiency, given that 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 use their best efforts 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, claim construction during the period of development, and preemptive licensing for anything potentially relevant—an excessive burden never imposed by the willfulness standard. 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

IP rights and property rights in tangible assets are analogous because 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.²⁴⁷ In intellectual property, the

247. *See, e.g., Moore v. Regents of the Univ. of Cal.*, 793 P.2d 479, 509 (Cal. 1990) (Mosk, J., dissenting) (explaining that property law seeks to protect an object with a related “bundle of rights”).

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 through the latter.²⁴⁸

The concepts of rivalness and entrepreneurial value have no application to intellectual property if rivalness requires physical interference: one's use of his tangible property to build a patented machine need never physically conflict with another's use of her tangible property to do the same. Physical preclusion of alternative uses is not the only form of rivalness, however. 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 expansion of the tort of nuisance beyond physical interference to cover, for example, diminutions in property value caused by aesthetic harm.²⁴⁹ The problem with this suggestion is that once the tether of physical interference is left behind, it is difficult to know where to draw the line. If a diminution in value caused by aesthetic harm is actionable, why is a diminution caused by competition not similarly actionable? If one's competing store reduces the value of another's, is the former party liable for nuisance? The only way to distinguish between such various acts affecting property value would be to apply some complex set of governance standards, and Smith's analysis of information costs gives us reason to be wary of doing so without a strong reason to think that those costs do not outweigh the gains from a more detailed regulation of uses.²⁵⁰

The decision to institute a system of IP rights is a decision to institute just such a governance regime. IP law grants rights to exclude that do not protect a choice between incompatible uses of tangible resources. Rather, the rights protect the IP owner's ability to earn a return on the rival inputs invested in the creation of valuable informational works. This latter goal is not foreign to the realm of tangible property rights, which also serve in part to resolve a positive externality problem by conferring a right to 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. Protecting the fruits of productive effort is also the point of Lockean labor theory, and this means protecting the creator's ability to use her creation in such a way as to improve the circumstances of her life. This principle applies to creation for purposes of exchange as much as to creation for purposes of consumption, and so the concept of rivalness properly applies to uses that destroy exchange value even though they create no physical conflict.

248. See, e.g., *In re Engage, Inc.*, 544 F.3d 50, 54 (1st Cir. 2008) (noting that receiving a patent gives the owner “a property interest—to exclude others from use of the property”).

249. See John Copeland Nagle, *Moral Nuisances*, 50 EMORY L.J. 265, 286–87 (2001) (discussing the evolving academic and judicial views of aesthetics in nuisance case law).

250. Smith, *Intellectual Property*, *supra* note 29, at 1786.

There are essentially two approaches available to an IP owner hoping to earn returns on her investment. The first approach is to use the right to exclude as a shield, behind which she (or her exclusive licensees) is able to select and implement a uniform entrepreneurial strategy for maximizing the commercial value of the work. The shield permits the IP owner to earn whatever return the market affords without being undermined by competition—economically rival use of the work—from others who seek to commercialize the same work even though they bore no costs of its creation. This can be analogized to a rival possessory use of a tangible resource, because 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. We can never reconstruct what the returns on the owner's commercial strategy would have been, which means her entrepreneurial value is lost.

The second approach is for the IP owner to let others undertake 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.²⁵¹ Note that there is nothing inherently blameworthy about this second strategy—not all creators are situated to be good commercializers. We want IP owners to capture the portion of the gains from trade that is 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, cutting into the 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 and investigate boundaries before making themselves vulnerable to holdout through irreversible investments. The nature of intellectual property is such that it is often irreducibly unclear what rights are needed until significant resources have already been invested.

Nonexclusive uses of intellectual property can thus be analogized to non-possessory uses of tangible resources. Before a productive enterprise is shut down for making non-possessory use of someone's land, the landowner is required 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* use his land to build a luxury resort worth millions of dollars. A non-possessory use is only regarded as rival to an actual use. If we were to apply this significant-harm rule in patent law as well, it would largely eliminate the so-called "patent troll" problem, as non-practicing entities would be no more entitled to an injunction than an owner of fallow farmland. A strict significant-harm rule, however, would not merely dull the patent owner's sword; it would sunder her shield as well. Here too, however, our rules for tangible property

251. See, e.g., *SRI Int'l, Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1464 (Fed. Cir. 1997) (affirming the award of enhanced damages in a patent infringement action).

require modification when imported to the realm of intellectual property. It is far too easy for infringers to act before an IP owner's plans for exclusive commercialization can be implemented and far too difficult for IP owners to discover and preemptively forestall all potentially infringing investments. If property-rule protection is denied to IP rights whose exclusive commercial value is not yet realized, that value will be strangled in the cradle.

This Article does not purport to resolve the dilemma, except to suggest that it is unlikely to be resolved satisfactorily through economic analysis alone. The "traditional equitable principles" invoked by the Court in *eBay* have long sought to identify those instances in which we can afford to remedy distributive injustice without encouraging the kinds of opportunism that the right to exclude serves to prevent. This Article has sought to show that this problem is present in all areas of property law and to illuminate the importance of avoidance costs to understanding the array of different responses employed in differing contexts. In important respects, the problem of holdout in patent law is better analogized to nuisance than to trespass, which means that a strict exclusion regime is unlikely to be optimal. Before departing from such a regime however, courts must question how confidently they can identify ambuscading sword-wielders without running afoul of Epstein's Law. To the extent that they cannot, the default rule remains what it has always been: assume the owner of intellectual property to be shielding entrepreneurial value, and assist her to do so.

