

IMPROVEMENT DOCTRINES

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INTRODUCTION

To say that intellectual property law is concerned with facilitating improvement seems, at first blush, rather uncontroversial. Article I, Section 8 of the U.S. Constitution gives Congress the power to enact patent and copyright laws “[t]o promote the *Progress* of Science and useful Arts.”¹ Various patent and copyright requirements try to ensure that a right-holder contributes something new or original rather than appropriating an invention or creative work that already exists. Facilitating the creation of new, and hopefully better, stuff is the utilitarian ethos of intellectual property law, its central goal.² And yet, improvers pose a particular challenge for intellectual property law because an improver’s acts may contribute significant social value but nonetheless run afoul of an existing intellectual property owner’s right to exclude. For example, suppose *A* invents a train brake that falls within the literal scope of *B*’s patented invention, but *A*’s train brake has vastly superior stopping power. Or *A* writes a best-selling novel that centers on a character in *B*’s copyrighted play.

Unlike intellectual property law, traditional property law is typically viewed as less concerned with facilitating improvement than with protecting the stability of ownership and “the subjective expectations particular owners have in particular things.”³ By most accounts, the sine qua non of property ownership is the owner’s right to exclude,⁴ its scope and duration potentially limitless. Over the past few decades, as intellectual property

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¹ See U.S. CONST. art. 1, § 8, cl. 8 (emphasis added).

² See, e.g., WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 74-76 (2003); Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1031 (2005).

³ Thomas W. Merrill, *Melms v. Pabst Brewing Co. and the Doctrine of Waste in American Property Law*, 94 MARQ. L. REV. 1055, 1093 (2011).

⁴ See 2 WILLIAM BLACKSTONE, *COMMENTARIES* *8; Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 730 (1998).

rights have strengthened and expanded in various ways, many commentators have lamented the seeming “proportization” of intellectual property—that is, intellectual property’s increasing resemblance to the supposed “absolute dominion” of fee simple ownership. Even more dangerous, these critics warn, are analogies to traditional property doctrine and theory, as they help courts, legislatures, and rent-seeking industries justify fewer limits on intellectual property owners and nearly absolute rights of exclusion.⁵

Of course, anyone who studies property law knows that such an absolutist characterization of property is simplistic.⁶ Property law has a long and well-documented history of limiting—for reasons of necessity, progress, or equity—owners’ rights to exclude, use, and transfer, even at the expense of an individual owner’s subjective expectations or idiosyncratic preferences. A number of property law doctrines thus “embody the view of property as a social institution,” and not just an individual right.⁷ And in recent years, a few intellectual property law scholars have begun to highlight the relevance of property law to intellectual property discourse by emphasizing the limits property law imposes on owners rather than its misperceived limitlessness.⁸

This Article furthers that effort by exploring property law’s treatment of unauthorized improvement—specifically, doctrines that alter parties’ rights and remedies where a second-comer makes unauthorized improvements (usually, significant in nature) to an owner’s land or chattels. The Article refers to these seemingly disparate doctrines in traditional property law as “improvement doctrines,” because they focus explicitly on the fact and significance of a second-comer’s improvement. Property law’s improvement doctrines “refine and supplement the basic exclusionary regime” of property.⁹ Or perhaps, stated another way, they are concerned with “postgrant correction”; they try to “reestablish proportionality” after unforeseen events increase a property owner’s leverage.¹⁰

After setting the theoretical stage in Part I, the Article proceeds in Part II to examine the jurisprudence of improvement doctrines in land and personal property—the doctrines of accession, mistaken improvers, ameliorative waste, and, to a lesser extent, adverse possession. It articulates a framework of the equity and efficiency concerns that have animated improvement doctrines in these traditional property contexts. Part II also ex-

⁵ See Lemley, *supra* note 2, at 1035.

⁶ See Carol M. Rose, *Canons of Property Talk, or, Blackstone’s Anxiety*, 108 YALE L.J. 601, 631 (1998) (“The very notion of property as exclusive dominion is at most a cartoon or trope . . .”).

⁷ Merrill, *supra* note 3, at 1083-84.

⁸ See, e.g., ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY 4-5 (2011); Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1, 47-48 (2004); Peter Lee, *The Accession Insight and Patent Infringement Remedies*, 110 MICH. L. REV. 175, 193 (2011); Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885, 889 (2008).

⁹ Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1749 (2007).

¹⁰ MERGES, *supra* note 8, at 182.

plores key features these improvement doctrines share, as well as notable distinctions, including the requirement of a certain state of mind (e.g., good faith) on the part of the improver and the requirement that improvements be significant. The variations among improvement doctrines highlight the complexity and adaptability of common law rules that privilege certain kinds of improvers over original owners of a resource.

Given the utilitarian focus of intellectual property law and its constitutionally directed focus on “progress,” one would expect intellectual property law to present a robust assortment of improvement doctrines at the post-grant stage. That is, one would expect to see legal doctrines that excuse from liability an unauthorized improver of a patented invention or copyrighted work, or, less drastically, mandate departure from a property rule in favor of a liability rule due to the fact and significance of her improvement. Surprisingly, few such doctrines exist.¹¹ Explicit consideration of the fact of improvement—e.g., an assessment of the value contributed by the second-comer’s unauthorized act—is largely absent from courts’ assessment of infringement liability and appropriate remedy. The recognition of this central irony—that intellectual property law’s treatment of unauthorized improvement at the post-grant stage may be more anemic than traditional property law—is one that has escaped judicial and scholarly notice.

Part III examines the (very) few intellectual property doctrines that may offer solace to unauthorized improvers. Both patent law’s reverse doctrine of equivalents and copyright’s fair use doctrine can, in theory, be used to excuse from liability certain unauthorized improvers of patented inventions and copyrighted works. But improvement is not expressly the focus of either, and as a result they inadequately protect improvers in a number of contexts. In the course of exploring these “quasi-improvement” doctrines in intellectual property, this Article considers why explicit post-grant consideration of unauthorized “improvement” is largely absent from intellectual property law. Certain inherent differences between the subject matter of tangible property law and intellectual property law make the task of comparative valuation (i.e., gauging the fact of “improvement” and its degree) far more difficult. The Supreme Court’s 2006 *eBay Inc. v. MercExchange, L.L.C.*¹² decision and subsequent district court opinions, however, suggest a potential shift in judicial receptiveness to improvement-oriented arguments in the context of patent remedy determinations.¹³

The final sections of Part III argue that the concerns illuminating improvement doctrines in traditional property are relevant to intellectual property. Notably, many of the efficiency and equity concerns animating improvement doctrines in the traditional property sphere are even more relevant to intellectual property given the fuzziness of intellectual property

¹¹ See *infra* Part III.A.

¹² 547 U.S. 388 (2006).

¹³ See *infra* Part III.A.1.d.

boundaries and the greater societal costs of deterring improvement. Part IV highlights potential areas of reform in patent and copyright law to enhance and regularize judicial consideration of unauthorized improvement at the liability and remedies stages.

I. PROPERTY & IP; IP & PROPERTY

A. *Traditional Property Law: An Overview*

Traditional property law covers a range of resources—from land to chattels to fugitive resources like water. Scholars have justified the institution of property in various ways, including natural-rights rationales that emphasize labor¹⁴ or personhood,¹⁵ and utilitarian justifications that emphasize efficiency gains stemming from a system of property.¹⁶ As to the latter, property rights have been justified as a mechanism to promote productive use and deter overexploitation of scarce resources.¹⁷

The legal conceptualization of property has also triggered different formulations. In the nineteenth century, William Blackstone provided a definition “that eventually became the rallying cry of an expansive understanding of property.”¹⁸ “[P]roperty,” he famously observed, is “that sole and despotic dominion which one man claims and exercises over the exter-

¹⁴ Traceable to John Locke, the labor argument emphasizes that, by laboring upon objects, one has a natural right to remove those objects from the common. See JOHN LOCKE, *THE SECOND TREATISE ON CIVIL GOVERNMENT* § 26 (Prometheus Books 1986) (1690).

¹⁵ A different natural rights justification, traceable to Friedrich Hegel and later embraced by scholars such as Margaret Jane Radin, emphasizes property’s importance for “personhood” and human self-actualization. See G.W.F. HEGEL, *PHILOSOPHY OF RIGHT* 52 (S.W. Dyde trans., Batoche Books 2001) (1896); Margaret Jane Radin, *Property and Personhood*, 34 *STAN. L. REV.* 957, 957 (1982).

¹⁶ See Abraham Bell & Gideon Parchomovsky, *A Theory of Property*, 90 *CORNELL L. REV.* 531, 542, 547 (2005). Efficiency justifications for a system of property focus primarily on externalities and transaction costs. For example, Garrett Hardin’s oft-invoked “tragedy of the commons” emphasizes the unavoidable overuse of tangible resources held in common because no user has an incentive to consider the impact of her use on others. Garrett Hardin, *The Tragedy of the Commons*, 162 *SCIENCE* 1243, 1244 (1968).

¹⁷ Most famously, Harold Demsetz has argued that in a world of transaction costs, private property often leads to greater efficiency because a single owner internalizes the costs and benefits associated with use. Thus, the owner has incentives to maximize the value of her property. Harold Demsetz, *Towards a Theory of Property Rights*, 57 *AM. ECON. REV. (PAPERS & PROC.)* 347, 355-57 (1967). Subsequent property theorists building upon Demsetz’s insights have usefully cautioned against “the global conclusion that greater propertization leads to greater efficiency.” Stewart E. Sterk, *Intellectualizing Property: The Tenuous Connections Between Land and Copyright*, 83 *WASH. U. L.Q.* 417, 426 (2005); see also Michael A. Heller, *The Tragedy of the Anticommons: Property in Transition from Marx to Markets*, 111 *HARV. L. REV.* 621, 624 (1998) (emphasizing the underuse that can result when too many overlapping property owners hold rights of exclusion in a resource—an “anticommons”).

¹⁸ Bell & Parchomovsky, *supra* note 16, at 543.

nal things of the world, in total exclusion of the right of any other individual in the universe.”¹⁹ Such an “absolutist” definition of property—emphasizing the in rem nature of the property right (i.e., attached to things and good against the rest of the world) and the primacy of the right to exclude—gave way in the twentieth century to a more malleable, less thing-focused, less exclusion-focused conception of property: property as a “bundle of rights” that could be disaggregated.²⁰

In recent years, however, the influential work of Thomas Merrill and Henry Smith has shifted definitional focus once again to the in rem nature of the property right, emphasizing its informational advantages for owners and non-owners.²¹ Whatever conception of property one subscribes to, it is perhaps fair to say that property law has emphasized exclusion to a greater extent than tort or contract law. Merrill and Smith argue that property’s general emphasis on exclusion is not an end or a good in and of itself, but rather a cheap proxy for harmful use.²² Trespass is the paradigmatic example. You don’t have to know anything about the trespasser (e.g., how the trespasser wants to use the land) or the owner (e.g., the owner’s subjective valuation of the harm) to resolve a dispute. Under trespass doctrine, an unauthorized boundary crossing generally warrants injunctive relief.

In the classic formulation of Guido Calabresi and A. Douglas Melamed, the property owner’s right in the trespass scenario is protected by a “property rule,” and she is restored to exclusive possession via injunctive relief.²³ Stated another way, a property rule gives the property owner a veto over nonconsensual transfers; potential takers must get the owner’s consent and pay the owner’s price. A liability rule, by contrast, merely compensates the right holder for the violation; the owner has no veto power, and the nonholder can take the entitlement in exchange for a court-determined price.²⁴ Property law relies to a significant extent on property rule protection.

¹⁹ BLACKSTONE, *supra* note 4, at *1-2.

²⁰ See THOMAS W. MERRILL & HENRY E. SMITH, PROPERTY 1 (2007) (observing that under the “bundle of rights” metaphor, no single incident of property ownership, like the right to exclude, achieves primacy). Many regard the “bundle of rights” conception as the prevailing view (at least, among academics). See Thomas W. Merrill & Henry E. Smith, Essay, *What Happened to Property in Law and Economics?*, 111 YALE L.J. 357, 357 (2001) [hereinafter Merrill & Smith, *What Happened*].

²¹ See Merrill & Smith, *What Happened*, *supra* note 20, at 359.

²² Smith, *supra* note 9, at 1752 (“[P]eople have an interest in use, and the right to exclude, based as it is on a simple on/off signal of violation by boundary crossing, is a very low-cost way to protect these interests.”).

²³ See Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1105 (1972).

²⁴ Calabresi and Melamed also address a third possibility not relevant to discussion here: an inalienability rule prohibiting transfer. *Id.* at 1092-93. Mark Lemley and Philip Weiser discuss another option: a “rule of no liability,” or what might be termed a ‘zero-price’ liability rule,” which “[i]n the property framework, we might think of . . . as a commons or ‘open access’ regime.” Mark A. Lemley &

Property law does not, however, rely exclusively on an exclusion strategy or property rule protection. It also relies, to some extent, on a “governance strategy” that defines a property right “more directly in terms of proper use.”²⁵ The law of nuisance is a classic example. While governance strategies allow for a more fine-grained, direct tailoring of rights and responsibilities than exclusion, this added directness is often more costly and complicated to achieve.²⁶ Despite the added complexity, however, various property law doctrines, like nuisance, have evolved “to refine and supplement the basic exclusionary regime.”²⁷ Part II focuses on a particular set of departures from the basic exclusionary regime in traditional property law—doctrines that specifically concern unauthorized “improvement” by private actors.

B. *Intellectual Property: An Overview*

Intellectual property law also relies, to a significant degree, on an exclusion strategy and property rule protection.²⁸ “Intellectual property” law is an umbrella term used to describe a group of legal doctrines that govern the use of different kinds of information and insignia.²⁹ Patent law protects certain inventions that are new, useful and non-obvious in light of the previous knowledge (or “prior art”).³⁰ Copyright protects original works of authorship fixed in a tangible medium of expression, including books, paintings, photographs, songs, computer software, and movies.³¹ More specifically, it is the information embodied in physical objects like toasters and novels which patent and copyright law protect.

Information (the subject of intellectual property) differs from tangible property (the subject of traditional property law) in significant ways. Unlike tangible property, information exhibits the characteristics of a public good because it is nonrivalrous (i.e., consumption by more than one person does

Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783, 786 (2007).

²⁵ Smith, *supra* note 9, at 1746.

²⁶ *Id.* For example, in nuisance cases, rather than looking at a simple boundary crossing, courts focus on the allegedly nuisance-creating activity itself, “like emitting odors . . . and contextual factors about the neighborhood and the relative benefits to society of the conflicting uses.” *Id.* Even if the activity is deemed a nuisance, the court might grant damages instead of injunctive relief. Thus, “the action rather than some defined thing is the focus of delineating the property right.” *Id.*

²⁷ *Id.* at 1749.

²⁸ Lemley & Weiser, *supra* note 24, at 783-84 (“Over the last several decades, . . . more and more courts and commentators have sought to align the rights of IP holders with those of real property owners, arguing for pervasive use of property rules and limited uses of ‘liability rules’ . . .”).

²⁹ William Fisher, *Theories of Intellectual Property*, in NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY 168, 168 (Stephen R. Munzer ed., 2001).

³⁰ *Id.*

³¹ *Id.*

not deplete the amount available to others) and nonexcludable (i.e., once information embodied in a book or patented invention is released, it is hard to exclude others from its benefits absent payment). Patents and copyrights are thus viewed as tools to correct for the public-goods problem inherent in information production. By obtaining rights to exclude for a set period of time, creators and inventors can recoup their investments, and society is thus guarded against the underproduction of information-based goods.³² Other forms of intellectual property, like trademarks and trade secrets, are grounded in somewhat different theories; this Article does not address these categories of intellectual property.³³

While some commentators have advanced natural-rights-based justifications for intellectual property,³⁴ domestic intellectual property law relies primarily on the utilitarian justification of providing economic incentives to create and innovate.³⁵ The descriptive and prescriptive limitations of this theory—in capturing the actual dynamics of creation—are a matter of spirited debate among intellectual property scholars.³⁶ It is nonetheless the dominant theory underlying patent and copyright law, emphasized both in the Constitution and in numerous judicial decisions.³⁷

But rights to exclude impose social costs as well as incentive benefits, including “the deadweight loss of monopoly pricing and the resulting limi-

³² See, e.g., LANDES & POSNER, *supra* note 2, at 74 (explaining IP’s optimization task); Lemley, *supra* note 2, at 1031.

³³ Trademark law protects words and symbols that help to identify the source of the goods or services (e.g., Coca-Cola). Somewhat different economic justifications predominate—for example, to reduce consumer confusion and search costs and to provide incentives for firms to produce high-quality goods and services because others will not be able to free ride on brand reputation. See ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 21 (5th ed. 2010). Trade secret law protects certain confidential information that companies attempt to keep secret from competitors (for example, the formula for Coca-Cola). Justifications for a trade secret are more varied, encompassing tort concepts like policing commercial morality. See Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, 61 STAN. L. REV. 311, 318 (2008).

³⁴ See Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533, 1549-64 (1993). For thoughtful comparisons of natural-rights, utilitarian, and other justifications for intellectual property, see generally MERGES, *supra* note 8, at ix-x; Fisher, *supra* note 29, at 170-71.

³⁵ See U.S. CONST. art. 1, § 8, cl. 8; *Mazer v. Stein*, 347 U.S. 201, 219 (1954).

³⁶ For example, “social norms” scholars have studied the role of intellectual property in academia, where creators are often motivated by nonpecuniary incentives like curiosity. See Katherine J. Strandburg, *Curiosity-Driven Research and University Technology Transfer*, in 16 *ADVANCES IN THE STUDY OF ENTREPRENEURSHIP, INNOVATION AND ECONOMIC GROWTH: UNIVERSITY ENTREPRENEURSHIP AND TECHNOLOGY TRANSFER: PROCESS, DESIGN, AND INTELLECTUAL PROPERTY* 93, 96-98 (Gary D. Libecap ed., 2005). Other scholars have argued for “broader” normative purposes for intellectual property that go beyond incentives to create. See Madhavi Sunder, *IP³*, 59 STAN. L. REV. 257, 331-32 (2006) (advocating a cultural theory of intellectual property that focuses on social relations).

³⁷ See sources cited *supra* note 35.

tations of dissemination.”³⁸ Inventions and creative works are by their very nature cumulative in that they build on prior works. Thus, intellectual property law must strike a balance between rewarding the originator of a particular invention or creative work, without stymieing the ability of future innovators to create new works. Given this quest for balance, intellectual property rights are limited in scope and duration. These limitations allow others to freely use protected works once intellectual property rights have expired or to tinker around the edges of existing intellectual property rights—e.g., “by taking the ideas but not the expression from a copyrighted work, or by ‘designing around’ the claims of a patent.”³⁹ But as discussed in Part III, existing limitations on patent and copyright scope may not, in and of themselves, provide improvers with sufficient room to maneuver.

C. *Analogizing IP to Property*

Over the past few decades, intellectual property’s commitment to balance has been called into question, as intellectual property rights have expanded in various ways. A number of scholars have described this expansion in the breadth, scope, duration, and strength of intellectual property rights, reflected most vividly perhaps by Congress’s twenty-year extension of the copyright term.⁴⁰ Proponents and defenders of this expansion often use tangible-property metaphors to bolster claims of exclusion, as do courts.⁴¹ In response, commentators who “advocate fewer exclusive rights and greater tailoring of the legal regime around valued uses” have criticized the “unjustified formalistic use of property metaphors and doctrines” in the intellectual property sphere.⁴² These critics lament the comparison of intellectual property to physical property, as it seems only to bolster normative claims that intellectual property rights should confer strict exclusive rights.

Commentators critical of the IP-as-property analogy emphasize significant differences between tangible property and information. For example, because information is nonrivalrous (i.e., it can be consumed by many without provoking scarcity concerns), the “tragedy of the commons” justifi-

³⁸ See MERGES ET AL., *supra* note 33, at 18.

³⁹ Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 991 (1997) (footnote omitted). For a more detailed description of the requirements of copyright and patent, see *infra* Section III.

⁴⁰ Sonny Bono Copyright Term Extension Act of 1998, Pub. L. 105-298, 112 Stat. 2827 (1998) (codified as amended at 17 U.S.C. §§ 301-04 (2012)). Thus, while under the Copyright Act of 1790, ch. 15, 1 Stat. 124 (1790), the original U.S. copyright term was fourteen years (with a fourteen-year renewal term), the current term is the life of the author plus seventy years.

⁴¹ See Carrier, *supra* note 8, at 10 & n.14 (citing numerous examples).

⁴² Smith, *supra* note 9, at 1756-57 (describing, but not agreeing with, the sentiment); see generally LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 14-15 (2001) (critiquing the propertization of information and its stifling effects on innovation).

cation for rights to exclude in tangible property is inapposite.⁴³ Others critique the IP-as-property analogy by highlighting the blurrier nature of intellectual property boundaries. With tangible property—and, in particular, real property—a robust public records system and other physical markers like fences make it fairly easy to determine the boundaries of an owner’s right and to avoid trespass. By contrast, the scope of an intellectual property right does not necessarily map onto a specific thing. Given “[t]he way IP operates, the creator of the work will almost always be able to obtain a property right that extends beyond the original embodiment of the work.”⁴⁴

These are indeed significant differences, but whatever the merits of such arguments, courts continue to embrace the analogy to tangible property.⁴⁵ Thus, rather than attack the analogy wholesale, some intellectual property scholars have begun illuminating the complexity of traditional property doctrine—in particular, the ways in which tangible-property law seeks to balance exclusionary rights of owners against competing equity and efficiency concerns in various contexts.⁴⁶ Borrowing from the insights of traditional property law and scholarship, these scholars question the simplistic characterization of traditional property law as fixated on exclusion—a characterization that advocates of unfettered intellectual property rights to exclude, as well as many courts, have historically emphasized. As Robert Merges recently observed:

Conventional wisdom repeated ad nauseum emphasizes that the essence of property is *the right to exclude*[.] . . . [meaning] to prevent access to

In truth, though, it is not nearly so hard to defend property. . . . The moment of the initial grant, and the formal definition of the right being granted draws attention away from what comes afterward. If we attend instead to what typically happens after property rights are assigned, a completely different picture comes into view. Attending to the crucial *postgrant* stage in the life of a typical property right . . . reveals all sorts of ways that the supposedly exclusive right of property is actually bound up with various forms of *inclusion*.⁴⁷

Property’s post-grant “inclusion” has particular relevance and resonance for modern intellectual property law. While historically, intellectual property’s quest for balance and concomitant limits “were built into the shape of the initial right,” for a variety of reasons that seems less true today.⁴⁸ Thus, attention has increasingly shifted to the post-grant stage of intellectual property rights—shaping liability and remedy determinations to assure that intellectual property law continues “to serve the finite, instru-

⁴³ See MERGES ET AL., *supra* note 33, at 2. *But see* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977) (analogizing the patent system to a “prospect” system used for mineral claims).

⁴⁴ See MERGES, *supra* note 8, at 59.

⁴⁵ See Carrier, *supra* note 8, at 10 & n.14.

⁴⁶ See sources cited *supra* note 8.

⁴⁷ MERGES, *supra* note 8, at 295.

⁴⁸ Carrier, *supra* note 8, at 5; *see also supra* note 40 and accompanying text.

mental function it was designed to serve.”⁴⁹ Without accepting the IP-as-property analogy uncritically, this Article suggests that traditional property law can nonetheless be a helpful lens in understanding and refining intellectual property law’s treatment of the unauthorized improver.

Part II examines traditional property doctrines that depart from the basic exclusionary regime where one party improves a resource without the consent of a right holder—here referred to as “improvement doctrines.” Given the stronger and more varied justifications for exclusionary rights in property law as compared to intellectual property law, and the particular dangers of overuse and scarcity-driven conflict unique to tangible property, one might expect traditional property law to be unwavering in the face of unauthorized improvement. Interestingly, however, property law departs from a strict rule of exclusion in the face of unauthorized improvement in various contexts.

II. THE IMPROVER IN TRADITIONAL PROPERTY LAW

The rhetoric of improvement, productivity, and progress crops up in a number of places in traditional property law. This is not surprising. Property law, in theory, mediates both inefficient overuse and underuse.⁵⁰ In the early history of the United States, courts embraced the language of improvement with particular fervor, as a vast, untamed wilderness needed cultivating.⁵¹ But property law also attempts to balance a number of competing values, including stability of ownership.⁵²

So how does property law deal with the unauthorized “improver,” whose desired use of the property may generate significant economic value but nonetheless violate the exclusive rights of a property owner? This Part focuses on a particular set of departures from the basic exclusionary regime in traditional property law concerning one party’s unauthorized improvement of a resource. When and why do courts excuse liability or relax property rule protection for owners in the face of unauthorized improvement by private actors?⁵³

⁴⁹ Carrier, *supra* note 8, at 5.

⁵⁰ See *supra* notes 16-17 and accompanying text.

⁵¹ See STUART BANNER, AMERICAN PROPERTY 18 (2011) (“In the conflict between the stability of existing land uses and the possibility of improvement, stability had once been the winner, but as time went on improvement gained the upper hand.”); John G. Sprankling, *The Antiwilderness Bias in American Property Law*, 63 U. CHI. L. REV. 519, 525-26, 530 (1996) (describing the utilitarian vision to encourage the development of a wilderness nation which characterized the development of early American property law).

⁵² Bell & Parchomovsky, *supra* note 16, at 551-52.

⁵³ The government’s eminent domain power has been utilized to transfer land between private actors for purposes of “economic development.” See *Kelo v. City of New London*, 545 U.S. 469, 472-73, 489-90 (2005) (holding that the use of eminent domain power to acquire private property for re-

A. *Traditional Property Law's "Improvement Doctrines"*

The doctrines of accession, mistaken improvers of land, and ameliorative waste are doctrines in which a court's consideration of unauthorized "improvement"—generally defined and measured by the increase in value of the resource attributable to the defendant's efforts—is fundamental to the outcome of the dispute. In all of these contexts, analysis of improvement is specific to a particular parcel or chattel that is the subject of the dispute—i.e., the locus of improvement. Moreover, "improvement" is measured in objective economic terms—i.e., a comparison of the fair market value of the resource before and after the unauthorized acts. This Section also briefly discusses the doctrine of adverse possession. Adverse possession occupies a more tenuous place in this category of improvement doctrines, as courts' consideration of the possessor's "improvement" of the property is not always central to the analysis and is more ad hoc.

1. Doctrine of Accession

The doctrine of accession considers the unauthorized improvement of personal property (chattels)—for example, when someone mixes her labor or other inputs with another's personal property.⁵⁴ Suppose *A* mistakenly cuts down *B*'s lumber and crafts it into a decorative chair. In such cases, courts must first decide who gets title to the improved property, the original owner or the unauthorized improver.⁵⁵

The paradigmatic case reflecting the modern approach to accession doctrine is *Wetherbee v. Green*.⁵⁶ George Wetherbee, under the mistaken belief that he had a valid license to do so, cut \$25 worth of trees on *Green*'s

transfer to other private parties as part of the city's economic development plan constituted "public use"). This Part focuses, however, on unauthorized improvement by private actors that occurs without prior government approval.

⁵⁴ This is not to be confused with the "broader principle of accession," which "refers to a family of doctrines" where "[o]wnership of some unclaimed or contested resource is assigned to the owner of some other resource that has a particularly prominent relationship to the unclaimed or contested resource." MERRILL & SMITH, *supra* note 20, at 165 (emphasis omitted); *see also* Thomas W. Merrill, *Accession and Original Ownership*, 1 J. LEGAL ANALYSIS 459, 463 (2009).

⁵⁵ In Roman times, the doctrine of accession was three separate doctrines. The doctrine of *accessio* applied when a production process joined two different items together (e.g., *A*'s grain put into *B*'s sacks). *Specificatio* applied when *B*'s labor transformed raw material owned by *A* into a different product (e.g., grain into malt). Finally, *confusio* applied when similar inputs of multiple persons were mixed together and the contributions of each could not be distinguished (e.g., combining the grain of multiple farmers into a single container). In modern times, courts use the single term "accession doctrine" to cover both *accessio* and *specificatio*, and distinguish this from *confusio*. *See* Earl C. Arnold, *The Law of Accession of Personal Property*, 22 COLUM. L. REV. 103, 103-104, 119 (1922).

⁵⁶ 22 Mich. 311 (1871).

land and then turned them into barrel hoops worth \$700. Green sued for recovery of the hoops, which a jury awarded him. The Supreme Court of Michigan reversed, stating that if Wetherbee had taken the lumber in good faith he could keep the hoops, provided he compensated Green for the value of lumber.

In reaching its decision, the court focused on two key facts: first, the significant disparity in value between the raw lumber and the hoops; and, second, Wetherbee's good faith in taking the lumber. Good faith in this case meant Wetherbee's reasonable but mistaken belief that he had permission from the landowner.⁵⁷ Moreover, the court's focus on disparity of value was significant because prior accession cases counseled a strict property rule in the original owner's favor unless the interloper had physically transformed the chattel in a way that destroyed its identity.⁵⁸ While such a test could be applied with relative ease in certain cases—e.g., grain turned into malt—the *Wetherbee* court criticized it as “a very unsatisfactory test” in other cases.⁵⁹ Instead, the court embraced a “comparative value” approach that focused on the second-comer's role in “improving” or increasing the value of the chattel by significant measure: “No test which satisfies the reason of 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.”⁶⁰

Following *Wetherbee*, other courts also adopted the “comparative value” approach.⁶¹ Thus, where a good faith improver significantly increases the value of another's chattel, the doctrine of accession shifts the chattel owner's property rule protection to a liability rule.

⁵⁷ Wetherbee allegedly obtained a license from one of two owners identified as title owners of the land; the licensor assured Wetherbee that he was authorized by the other owner to make the sale, but this was not true. *Id.* at 311-13.

⁵⁸ *Id.* at 313-14.

⁵⁹ In Wetherbee's case, such a physical transformation/destruction-of-identity test would have required an inquiry into “whether standing trees, when cut and manufactured into hoops, are to be regarded as so far changed in character that their identity can be said to be destroyed within the meaning of the authorities.” *Id.* at 318-19.

⁶⁰ *Id.* at 320. The court noted: “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 . . . 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 circumstance.” *Id.* at 320-21.

⁶¹ See, e.g., *Woodrick v. Wood*, No. 65207, 1994 WL 236287, at *3 (Ohio Ct. App. May 26, 1994); *Capitol Chevrolet Co. v. Earheart*, 627 S.W.2d 369, 371-72 (Tenn. Ct. App. 1981); *Drake Ins. Co. v. King*, 606 S.W.2d 812, 818 (Tex. 1980), *superseded by rule as stated in* *Bay Area Healthcare Grp., Ltd. v. McShane*, 239 S.W.3d 231 (Tex. 2007).

2. Mistaken Improvers of Land

Moving from chattels to land, courts encounter a somewhat similar dilemma. Sometimes, a person accidentally erects a structure that encroaches a few inches onto her neighbor's property—"minor encroachment" cases.⁶² More drastically, someone mistakenly erects a structure that occupies a large part of another's land or sits entirely on another's land and increases the value of that land by significant measure—"mistaken improver" cases.⁶³ In the mistaken improver scenario, the mistake is usually attributable to defective title (e.g., A thought she owned the property when she improved it, but her title turns out to be defective) or to a mistake in the land's location (e.g., the "wrong lot" cases).⁶⁴ Thus, mistaken improver cases involve conflicts between a true owner and someone who mistakenly thinks she is the true owner.

In most mistaken improver cases, the second-comer built on the other's property a large structure that is only removable at great cost (e.g., a parking lot or brick building).⁶⁵ While "a few owners may argue that the improvement was of no benefit to them, most owners will concede they have been enriched."⁶⁶ Thus, the question in these cases is whether the property owner, who did not consent to the intrusion, is entitled to the improved property (or removal of the structure), or if rights and remedies should be altered to recognize the mistaken improver's contribution to the property's increase in market value.⁶⁷

Under the conventional common law view, the mistaken improver of land was not entitled to any compensation from the landowner for the improvement.⁶⁸ But early American courts were somewhat more sympathetic to the plight of mistaken improvers than their English predecessors who

⁶² In encroachment cases, the focus is on the undue hardship the minor encroacher would face should removal be mandated, and the "de minimus" nature of the harm to the landowner should the encroachment be allowed to continue upon payment of compensation. See *Golden Press, Inc. v. Rylands*, 235 P.2d 592, 595 (Colo. 1951) (en banc) ("Where defendant's encroachment is unintentional and slight, plaintiff's use not affected and his damage small and fairly compensable, while the cost of removal is so great as to cause grave hardship . . . mandatory injunction may property be denied . . .").

⁶³ The encroachment and mistaken improver doctrines, like the doctrine of accession relating to chattel, can be traced to the Roman law of accession. See Kelvin H. Dickinson, *Mistaken Improvers of Real Estate*, 64 N.C. L. REV. 37, 37-39 (1985); John Henry Merryman, *Improving the Lot of the Trespassing Improver*, 11 STAN. L. REV. 456, 457-58 (1959).

⁶⁴ See Dickinson, *supra* note 63, at 37-38.

⁶⁵ *Id.* at 72.

⁶⁶ *Id.* at 49-50 (footnote omitted).

⁶⁷ MERRILL & SMITH, *supra* note 20, at 67-68.

⁶⁸ See Robert C. Casad, *The Mistaken Improver—A Comparative Study*, 19 HASTINGS L.J. 1039, 1039 (1968).

“held the mistaken improver in disdain and ignominy.”⁶⁹ Likely, the more charitable attitude of American courts in this regard was because mistaken improvement proved more of a problem in a young America, being as it was a sporadically settled, vast wilderness “devoid of the customary indicia of ownership and location found in more developed parts of the world.”⁷⁰

As courts demonstrated an increased willingness to depart from the conventional common law rule in these mistaken improvement cases, states began enacting “‘betterment’ or ‘occupying claimant’ acts.”⁷¹ Though the specific provisions of these statutes may vary, most share these common features: provided the improver has acted in good faith (i.e., reasonably believing the land was hers to improve⁷²), and under color of title, the owner has a “choice of selling his land to the improver or paying the improver the value of the improvements.”⁷³ While betterment acts offer relief for a certain category of mistaken improvers—i.e., the “defective title” variety—in several jurisdictions, many courts have expanded this relief to other mistaken-improver scenarios.⁷⁴

Thus, where a significant improvement is made to another’s land in good faith, the landowner can choose to either sell the land to the improver at its unimproved value or pay the improver the value of the improvement. That the owner is offered a choice in the land context (to sell his land to the improver or to keep it and pay for the value of the improvement) differs from the chattel accession context discussed above. This difference is attributable perhaps to the notion that land is unique in a way that chattels are not. But even in the land context, unqualified property rule protection for the owner ultimately gives way in the face of good faith improvement.

⁶⁹ Dickinson, *supra* note 63, at 52; *see also* Bright v. Boyd, 4 F. Cas. 127, 131-33 (C.C.D. Me. 1841) (No. 1,875) (concluding that the traditional restrictive approach to the mistaken improver should not prevail in America).

⁷⁰ Dickinson, *supra* note 63, at 41-42; *see also* Sprankling, *supra* note 51, at 544-45. In modern times, land is substantially occupied, survey methods improved, and title records publicly available. Thus, mistaken improver cases are more rare today—though cases do still arise. Dickinson, *supra* note 63, at 54, 57 n.112 (listing cases).

⁷¹ At least forty-two states have such a statute. *See* Dickinson, *supra* note 63, at 42 & n.28 (citing state statutes).

⁷² Though there is variation among jurisdictions, relief is generally “denied [to] improvers who were negligent or failed to act reasonably in examining their titles or locating their land.” *Id.* at 60-61 & nn.126-31 (footnotes omitted) (listing cases); *see also* Casad, *supra* note 68, at 1050.

⁷³ Dickinson, *supra* note 63, at 44-45. Where the owner elects to compensate the improver, the improver is typically entitled to compensation equal to the lesser of either the value of the improvement or the improver’s actual costs in making the improvement. *Id.* at 62-63.

⁷⁴ *See* Duncan v. Akers, 262 N.E.2d 402, 406-07 (Ind. App. 1970) (noting that the state’s betterment act is not the exclusive remedy for mistaken improvers and color of title not required for a restitution claim). Dickinson notes the rise in “mistaken location cases . . . with the advent of the subdivision, in which all lots are similar,” and surmises that “[t]he recent liberalization of judicial relief in several jurisdictions may be attributed in part to the increase in subdivision cases, which typically cannot be remedied under most betterment statutes.” Dickinson, *supra* note 63, at 57 n.112.

3. Ameliorative Waste

Dating from the twelfth century, the doctrine of waste has long governed disputes between parties holding sequential ownership interests in property—temporal neighbors, as opposed to physical neighbors. The doctrine typically applies whenever two or more people have interests in the same property but one is not currently in possession—for example, a life tenant and the holder of a remainder or reversion. Thus, waste is different than the accession or mistaken-improver-of-land contexts in that it involves two (or more) parties with a legitimate claim to the same property, but one's right to possession is remote in time.

Most commonly, a future possessor of property, like a reversioner or remainderman, invokes the waste doctrine against a current possessor property, usually a life tenant. Three categories of waste emerged over time: affirmative, permissive, and ameliorative. Affirmative waste occurs where the life tenant takes some affirmative act that damages the property. Permissive waste refers to inaction or neglect (e.g., failing to repair a roof). Both are relatively uncontroversial forms of waste designed to protect the longer-term interests of the future interest holder against the shortsighted whims of a life tenant.⁷⁵ In these more typical waste scenarios, the future interest holder can enjoin the current interest holder from taking such action or inaction that damages the property's value, or, if the offending affirmative act has already occurred, can seek redress, sometimes in the form of double or triple damages, or even the tenant's forfeiture of the property.⁷⁶

But what if the life tenant acts instead to increase, rather than decrease, the value of the property? Such value-increasing acts fall under the third category of waste: ameliorative waste. Historically, courts treated value-increasing acts by the life tenant as just another indistinguishable species of impermissible affirmative waste. Under this view, the future interest holder was entitled to take possession of the property in more or less the same form as it existed under the life tenant. Thus, a life tenant could not make any material change in the property—even one that significantly increased the value of the property—without the future interest holder's permission.⁷⁷ The absolute rule of waste that failed to distinguish between value-increasing and value-decreasing changes to property was “consistent with the view of property as an individual right,” whose “purpose . . . [was] to protect owned things from interference by others.”⁷⁸

⁷⁵ MERRILL & SMITH, *supra* note 20, at 603-04.

⁷⁶ See *Melms v. Pabst Brewing Co.*, 79 N.W. 738, 739 (Wis. 1899).

⁷⁷ *Id.* (describing the long-held principle that the reversioner or remainderman is ordinarily entitled to receive the identical estate).

⁷⁸ Merrill, *supra* note 3, at 1059-60.

But American courts began to relax this absolute rule of waste in the late-nineteenth and early-twentieth centuries.⁷⁹ The landmark case *Melms v. Pabst Brewing Co.*⁸⁰ illustrates this shift to a more flexible rule of waste—one that privileged significant value-enhancing improvements to land in certain circumstances over the idiosyncratic preferences of a long-term owner. In *Melms*, the property at issue was a Milwaukee mansion, of which Fredrick Pabst (of Pabst beer fame) was a life tenant. The children of Marie Melms had a remainder interest in the property. Mistakenly believing he had a fee simple, Pabst tore down the mansion and graded down the ground for industrial use.⁸¹ The Melms children subsequently sued him, claiming waste. The Wisconsin Supreme Court rejected that argument, holding that Pabst had not committed waste by leveling the home. As many commentators have noted, “[t]he decision contained path-breaking language seeming to say that waste disputes should be resolved by comparing economic values.”⁸²

Notably, the court in *Melms* focused on the significant difference in value brought about by Pabst’s alteration, due to the neighborhood’s change from a residential to industrial district.⁸³ After *Melms*, the ground began to shift in American waste law.⁸⁴ The American Law Institute adopted a test consistent with *Melms* in its Restatement of Property.⁸⁵ Over time, a majority of American states adopted an approach that looks primarily to increase in value, or a combination of changed circumstances and increase in value (akin to *Melms*). Thus in many states, absent a contract restricting alterations or improvements, the determination of actionable waste depends largely on whether the alteration increases the value of the property.⁸⁶

⁷⁹ See, e.g., *id.*; see also John A. Lovett, *Doctrines of Waste in a Landscape of Waste*, 72 MO. L. REV. 1209, 1256-57 (2007); Jedediah Purdy, *The American Transformation of Waste Doctrine: A Pluralist Interpretation*, 91 CORNELL L. REV. 653, 660-62 (2006).

⁸⁰ 79 N.W. 738 (Wis. 1899).

⁸¹ *Id.* at 738.

⁸² Merrill, *supra* note 3, at 1056.

⁸³ *Melms*, 79 N.W. at 740 (“The evidence shows that the property became valueless for the purpose of residence property Business and manufacturing interests advanced and surrounded the once elegant mansion, until it stood isolated and alone Can it be reasonably or logically said that this entire change of condition is to be completely ignored, and the ironclad rule applied that the tenant can make no change in the uses of the property because he will destroy its identity?”).

⁸⁴ See Merrill, *supra* note 3, at 1059. While Merrill dates the transformation of American waste law to the early twentieth century, other scholars suggest a fundamental shift occurred in the nineteenth century. See Sprankling, *supra* note 51, at 525-26, 530.

⁸⁵ See RESTATEMENT (FIRST) OF PROPERTY §§ 138, 145 (1936); 5 AMERICAN LAW OF PROPERTY § 20.11 (2d prtng. 1974).

⁸⁶ See Gina Cora, *Want Not, Waste Not: Contracting Around the Law of Ameliorative Waste* 20-22 (2009) (unpublished manuscript), available at http://digitalcommons.law.yale.edu/ylspps_papers/47 (suggesting that thirty or more states employ consideration of increased value and changed circumstances when assessing waste, and cataloging the relevant state statutes). In practice, the prevalence of the trust instrument has made waste conflicts increasingly rare in modern times. Despite the relative infre-

The role of good faith is more ambiguous (and certainly more peripheral) in waste doctrine than in the doctrines of accession or mistaken improvement. While the court in *Melms* noted the improver's mistaken belief that he was the owner of the land in fee simple rather than as a life estate, many cases ignore the improver's state of mind.⁸⁷

4. Adverse Possession

The doctrine of adverse possession allows a trespasser's claim to ripen into lawful title with the passage of enough time.⁸⁸ If one possesses another's land continuously for a statutorily prescribed period (e.g., twenty years) and can demonstrate possession that has been actual, open, notorious, exclusive, and under a claim of right, then she can quiet title to the property or withstand an owner's ejectment action.⁸⁹ There is no explicit requirement that an adverse possessor "improve" or increase the value of the property to gain title. However, courts do look at the way the adverse possessor has used the property in assessing the requirements of actual, open, and notorious possession. In general, so long as the possessor uses the property in the way an ordinary owner would, these requirements are satisfied.⁹⁰ These requirements provide notice to a record owner, a clear signal that his or her ownership right is being threatened. Presumably, a reasonably attentive owner would notice if someone was using her property in this way without permission.

While improvement is not an explicit requirement of adverse possession doctrine, in practice "adverse possession doctrine typically favors possessors who 'take control' of the land in some tangible way, as through fencing, cultivating, or improving it."⁹¹ As Lee Anne Fennell observes, "shifts to more intensive uses are relatively easier through adverse possession than shifts running in the other direction."⁹² Thus, adverse possession doctrine has been viewed as one that can "disproportionately facilitate shifts

quency of waste disputes, the transformation of American waste doctrine has been a subject of significant academic interest. See Merrill, *supra* note 3, at 1056.

⁸⁷ See *supra* text accompanying note 81.

⁸⁸ The prescriptive easement is "a 'first cousin' of adverse possession." See Thomas W. Merrill, *Property Rules, Liability Rules, and Adverse Possession*, 79 NW. U. L. REV. 1122, 1124 & n.11 (1985). Prescriptive easements concern the use, rather than possession, of property, which then ripens into an easement, rather than fee simple ownership. 9 RICHARD R. POWELL, *POWELL ON REAL PROPERTY* § 34.01 (Michael Allan Wolf ed., 2000).

⁸⁹ See MERRILL & SMITH, *supra* note 20, at 198.

⁹⁰ The activity required of an adverse possessor will differ depending on the character of the land and typical usage—for example, farmland versus wildlands. See Lee Anne Fennell, *Efficient Trespass: The Case for "Bad Faith" Adverse Possession*, 100 NW. U. L. REV. 1037, 1078-79 (2006).

⁹¹ *Id.* at 1078.

⁹² *Id.*

of land to more intensive uses”—an effect that has triggered criticism from environmentalists and others who champion low-intensity land uses.⁹³ The doctrine’s seeming preference for more intensive uses of land has led some scholars to identify a set of rationales for adverse possession “that focus on prodding the sleeping owner or rewarding the productive possessor.”⁹⁴

Of course, one should not overstate the “improvement” orientation of adverse possession doctrine. Notably, “nothing in adverse possession doctrine requires a record owner to develop her land in order to retain title.”⁹⁵ The owner doesn’t even have to occupy the land to thwart an aspiring adverse possessor; “all [the owner] has to do is periodically assert his right to exclude others.”⁹⁶ Thus, other rationales for adverse possession emphasize the reliance and personhood interests an adverse possessor may have developed in the course of her long-term possession.⁹⁷ Alternatively, they emphasize the doctrine’s role in cleaning up titles: “By systematically eliminating these old claims, like a broom that sweeps away old cobwebs, adverse possession reduces the costs of engaging in these transactions, and hence enhances the efficiency of property markets.”⁹⁸ (Though, in many states, marketable title acts arguably play this “clean-up” or title-stabilizing role more effectively.)⁹⁹

As in many other unauthorized improver contexts, the interloper’s state of mind plays a role, but it is less straightforward in the adverse possession context than in the accession or mistaken improver contexts. Courts engage the state-of-mind question in assessing whether the possession was “adverse and under a claim of right” (sometimes, this is described as the “hostility” requirement). A minority of states apply a “good faith standard,” which generally requires a possessor to be ignorant of the fact of her encroachment.¹⁰⁰ Most states are said to employ an objective standard, mean-

⁹³ *Id.*; see also Sprankling, *supra* note 51, at 525-26, 538-40 (criticizing adverse possession and other land use doctrines that privilege development over nondevelopment).

⁹⁴ Fennell, *supra* note 90, at 1059. Though these justifications are sometimes presented “as a straw man worthy of ridicule,” *id.* at 1064, Fennell suggests that they “imperfectly grope[] toward the true niche goal of adverse possession: moving land into the hands of a (much) higher-valuing user, where ordinary markets cannot accomplish that task.” *Id.* at 1059-60.

⁹⁵ *Id.* at 1077.

⁹⁶ Merrill, *supra* note 88, at 1130.

⁹⁷ MERRILL & SMITH, *supra* note 20, at 200-01 (noting other terms used to describe the adverse possessor’s reliance interest include “loss aversion” or the “endowment effect,” which describe people’s tendencies to experience loss more acutely than gain); see also Margaret Jane Radin, *Time, Possession, and Alienation*, 64 WASH. U. L.Q. 739, 748-50 & n.26 (1986) (discussing this in terms of “personhood”).

⁹⁸ MERRILL & SMITH, *supra* note 20, at 202.

⁹⁹ Marketable title acts allow claims of a certain age (for example, forty years old or more) to be ignored in establishing title to property. See Fennell, *supra* note 90, at 1063-64.

¹⁰⁰ An even smaller (and ever-shrinking) minority employs a “bad-faith” or “aggressive trespass” standard, which requires the possessor to know of his encroachment or intend to take what he does not own. *Id.* at 1046-47.

ing that courts ask only if the possession was without the owner's permission and look no further into the possessor's state of mind. But Richard Hemholz's oft-cited 1983 study revealed that even in states applying an objective standard, courts are nonetheless partial to good faith adverse possessors.¹⁰¹ Thus, even where good faith is not required, "it may [nonetheless] carry considerable weight in influencing judicial assessments" of adverse possession.¹⁰²

B. *Concerns Motivating Improvement Doctrines in Property Law*

In the improvement doctrines discussed above, the offense was "redefined" to exclude certain acts of improvement (e.g., waste)—a shift from property rule protection to a no-liability rule. Or the traditional remedy of injunctive relief was replaced with a damage remedy—a shift from property rule to liability rule protection. What accounts for the cluster of property doctrines, oriented explicitly around the unauthorized improver?

This Section develops a categorization of concerns motivating these improvement doctrines. These doctrines share features that are useful to consider and, as developed in Part III, are useful in considering the issue of unauthorized improvement in intellectual property. This Section also discusses important ways in which these doctrines differ from one another, why these differences arise, and how certain features of these doctrines attempt to mitigate some of the costs associated with departures from an "exclusion strategy."

In exploring the concerns animating these improvement doctrines, it is useful to distinguish between *ex ante* and *ex post* analysis. In these improver contexts, an *ex ante* analysis focuses on the circumstances between the owner and non-owner before the unauthorized improvement occurs, while *ex post* analysis considers the situation after it occurs. Depending on the focus, *ex ante* or *ex post*, "[t]he analysis of both efficiency and justice may differ dramatically."¹⁰³ Because courts address the bulk of improvement-related controversies after the improvement has occurred—e.g., after wood has been turned into hoops or after the parking lot has been built on the wrong lot—they often emphasize the *ex post* perspective. As a general mat-

¹⁰¹ R.H. Helmholz, *Adverse Possession and Subjective Intent*, 61 WASH. U. L.Q. 331, 331-32 (1983). *But see generally* Roger A. Cunningham, *Adverse Possession and Subjective Intent: A Reply to Professor Helmholz*, 64 WASH. U. L.Q. 1 (1986) (critiquing Helmholz).

¹⁰² Fennell, *supra* note 90, at 1047. As Fennell notes, this preference for good faith possessors is echoed in the scholarly literature. *See, e.g.*, Merrill, *supra* note 88, at 1126, 1136; *see also* Richard A. Epstein, *Past and Future: The Temporal Dimension in the Law of Property*, 64 WASH. U. L.Q. 667, 685-89 (1986). Fennell is the notable exception in this regard, as she advocates restricting application of the doctrine to bad faith possessors who demonstrate knowledge of their encroachments at the time of entry. Fennell, *supra* note 90, at 1041-45.

¹⁰³ MERRILL & SMITH, *supra* note 20, at 64.

ter, “[e]x post analysis tends to focus on fairness and distributional concerns, whereas ex ante analysis is more likely to consider incentives for future conduct.”¹⁰⁴ However, in a number of these cases, courts cabin the reach of improvement doctrines—e.g., by limiting application to “good faith” improvers or improvements that generate significant increase in the resource’s value—in light of incentives for future behavior. The discussion in this Section focuses on concerns that have been emphasized in judicial or academic commentary.

1. Equity and Fairness

In many of the improvement cases described above, courts were motivated by concerns of “unjust enrichment” inuring to the property owner or of “undue harm” to the improver absent a departure from the traditional rule. Typically, the accession and mistaken improver cases present situations where there is little dispute that the unauthorized act has increased the fair market value of the property at issue. The question, then, is who is entitled to fruits of the improver’s productive efforts? In theory, the parties ought to be able to avoid litigation and negotiate an equitable solution. On the other hand, the two parties are in “a bilateral monopoly” situation, where there is only one buyer and one seller involved.¹⁰⁵ The concern is that in the shadow of a property rule, the owner will try to “extort” a disproportionate share of the value created by the improver. “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.”¹⁰⁶

One could also describe the fairness concern as one of “proportionality.” Recently, Robert Merges has described the proportionality principle with respect to property and intellectual property rights as “an impulse to tailor a creator’s property right in a way that reflects his contribution,” a principal with “a distinctly Lockean flavor.”¹⁰⁷ “At its heart it is about basic fairness: the scope of a property right ought to be commensurate with the magnitude of the contribution underlying the right.”¹⁰⁸ In this way, property law’s improvement doctrines “recognize[] that there are times when legal entitlements give someone ‘excessive’ or ‘disproportionate’ leverage,”—

¹⁰⁴ *Id.* at 67.

¹⁰⁵ Merrill, *supra* note 3, at 1086; see also James E. Krier & Stewart J. Schwab, Essay, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 450-51, 460-61 (1995) (discussing the role of high transaction costs in bilateral monopolies).

¹⁰⁶ Christopher M. Newman, *Patent Infringement as Nuisance*, 59 CATH. U. L. REV. 61, 62 (2009).

¹⁰⁷ MERGES, *supra* note 8, at 8.

¹⁰⁸ *Id.*

i.e., “power beyond what a person rightfully deserves, or beyond what makes sense, given the circumstances.”¹⁰⁹

Courts have also considered the degree of harm the improver will face absent a shift from property rule protection, relative to the right holder. For example, in the ameliorative waste cases, courts are particularly attentive to the harm a life tenant will suffer given the inability to make productive use of the land—particularly given changed circumstances in the neighborhood. Thus, in *Melms*, for example, the court expressed concern that the life tenant would not be able to use the property in any economically valuable way given the changed neighborhood circumstances.¹¹⁰

2. Deterring Strategic Holdout/Bargaining Breakdown

The conventional wisdom is that courts should depart from a property rule only when transaction costs are sufficiently high that the relevant parties cannot reach agreement regarding resource access.¹¹¹ One kind of transaction cost is the difficulty of negotiating with multiple parties, any of which could refuse access to prevent the achievement of an efficient end result. “Pollution [nuisance] cases, which typically involve large numbers of parties, with consequent holdout or freerider problems, are the classic example.”¹¹² Even in the waste context, cases may involve multiple parties that are difficult to identify and locate (e.g., unborn future interest-holders).¹¹³

Most of the improvement scenarios, however, present only two easily discernable parties to the transaction. Thus, transaction costs should presumably be low as improver and owner can find one another with relative ease and negotiate a solution. But even in these two-party, bilateral-monopoly situations, there is the risk that a seller will engage in strategic behavior to capture a disproportionate share of the rents. “[T]he problem is not just the layering of multiple transactions but the risk of strategic behavior attendant on each one”¹¹⁴—a problem that is no doubt exacerbated in the context of multiple parties, but not limited to that context.

¹⁰⁹ *Id.* at 160.

¹¹⁰ *Melms v. Pabst Brewing Co.*, 79 N.W. 738, 741 (Wis. 1899); Merrill, *supra* note 3, at 1057-58.

¹¹¹ See Krier & Schwab, *supra* note 105, at 451.

¹¹² Sterk, *supra* note 17, at 455; see also *Boomer v. Atl. Cement Co.*, 257 N.E.2d 870, 875 (N.Y. 1970).

¹¹³ In those cases, high transaction costs may prevent efficient bargaining among parties. While a liability rule can overcome holdout problems in multiple-party/high-transaction-costs situations, it may not guarantee a perfectly efficient result—i.e., providing an accurate valuation of damages which equals actual harm. Stewart E. Sterk, *Property Rules, Liability Rules, and Uncertainty About Property Rights*, 106 MICH. L. REV. 1285, 1291 (2008); see also Krier & Schwab, *supra* note 105, at 462-64.

¹¹⁴ Lemley & Weiser, *supra* note 24, at 793; see also Carol M. Rose, *The Shadow of The Cathedral*, 106 YALE L.J. 2175, 2184 (1997) (distinguishing Type I transaction costs, which relate to assem-

Thus, the holdout dynamic described above may be problematic not just in an equity sense, but also from the standpoint of efficiency because it can cause negotiations to break down, even where agreement will lead to a cooperative surplus.¹¹⁵ Or even if agreement is reached, an exorbitant share of the potential surplus value may be dissipated on bargaining costs.¹¹⁶ In such situations, liability rules can lead to greater ex post efficiencies than property rules because liability rules are more likely to overcome strategic bargaining and thus reduce the need for litigation.¹¹⁷ Or where strategic bargaining prevents parties from negotiating to efficient solutions, courts can more accurately access the value of the parties' competing uses.¹¹⁸ The most prominent arguments for liability rule protection have thus focused on ex post efficiency concerns—minimizing inefficiencies once a dispute between parties has occurred.

3. Deterring Inefficient Search/Avoidance Costs

More recently, scholars have shifted focus from ex post to ex ante efficiency concerns.¹¹⁹ Henry Smith suggests the ex ante coordination advantages of property rules generally outweigh “whatever advantages liability rules might have in overcoming ex post strategic bargaining.”¹²⁰ Because “[p]roperty rules enable the ‘owner’ of a resource to serve as a clearinghouse for information about the values potential users attach to that resource,” a resource owner can “channel those resources to the bidders who value them most—promoting efficient use of those resources.”¹²¹

Stewart Sterk, however, argues that the ex ante coordination benefits of property rules described by Smith “depend[] critically on shared and accurate information about the boundaries of legal rights.”¹²² Thus, even if

bling large or indefinite groups, from Type II transaction costs, which encompass the actual costs of bargaining, including strategic behavior).

¹¹⁵ See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 83-84 (5th ed. 1998) (discussing the issue with respect to waste); Merrill, *supra* note 3, at 1086.

¹¹⁶ See Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 *YALE L.J.* 2091, 2094 (1997); Newman, *supra* note 106, at 73.

¹¹⁷ See Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 *YALE L.J.* 1027, 1039-47 (1995) (suggesting liability rules can induce parties to reveal information they might otherwise keep to themselves in the shadow of a property rule because a liability rule makes the outcome more uncertain for both parties).

¹¹⁸ For the latter to be true, courts need to have sufficient information (for example, the value of at least one of the competing uses) to come to an efficient decision. See Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 *HARV. L. REV.* 713, 759-60 (1996).

¹¹⁹ Sterk, *supra* note 113, at 1287.

¹²⁰ See *id.* at 1295 (citing Henry E. Smith, *Property and Property Rules*, 79 *N.Y.U. L. REV.* 1719, 1728-29 (2004)).

¹²¹ *Id.*

¹²² *Id.* at 1288.

property rights are defined clearly in the abstract (e.g., trespass triggers a property rule), an improver's costs of acquiring information about the *scope* of property rights in certain contexts (e.g., ordering expensive boundary surveys) will exceed the social value of that information. In such "circumstances, further search for information about the scope of rights is inefficient [because] the social harm avoided by further search does not justify the costs of the search."¹²³ In those situations, courts may lower property rule protection to liability rule protection, as the latter "limits incentives to conduct inefficient search for the scope of property rights."¹²⁴

Property doctrine reflects this insight in the various contexts, including the mistaken improver of land and accession doctrines. Courts' willingness to depart from a property rule in such cases is due, at least in part, to the fact that adhering to a property rule would create incentives to engage in inefficient searches regarding the scope of property rights. In many of these cases, the improvers relied on incorrect land surveys, a title that ended up being deficient, an insufficient license, and the like. Thus, in "label[ing] the improver's mistake 'innocent' and the improver's decision to build without further investigation 'reasonable'" courts "[i]n effect . . . are suggesting further search would have been too much to expect."¹²⁵ As is discussed in Part III, the costs associated with ascertaining the scope of property rights and the identity of right-holders are magnified in the intellectual property context.

4. Third Party Externalities and Changed Circumstances

Where the improvement creates positive externalities for third parties, an additional concern is that protecting the property owner's entitlement with a property rule might disproportionately chill incentives to make productive investments. Property law's improvement doctrines by and large do not reflect this concern. But the concern does manifest itself in certain improvement cases; for example, in *Melms*, the court highlighted the improvement's alignment with changed circumstances in the neighborhood.¹²⁶

¹²³ *Id.* at 1285.

¹²⁴ Since "'property rule' protection often gives leverage to right holders disproportionate to the harm those right holders would suffer from intrusion on their rights," it skews an improver's incentive to expend time and money on search even where it will generate minimal social benefit. *Id.*

¹²⁵ Sterk, *supra* note 113, at 1320.

¹²⁶ *Melms v. Pabst Brewing Co.*, 79 N.W. 738, 740-41 (Wis. 1899).

C. *Defining Features of Property's Improvement Doctrines*

The improvement doctrines discussed above both share various features and differ in important ways, including: (1) the status of the parties and degree of right-holder dispossession involved; (2) the requirement of good faith; and (3) the significance of improvement required. For example, the accession, mistaken improver, and adverse possession contexts involve one clear resource owner and one clear non-owner who uses the property without the owner's permission in a way that results in increased fair market value of the disputed property. By contrast, ameliorative waste cases generally involve two parties with legitimate possessory claims to the property: one current-interest holder and one (or more than one) future interest holder. Unlike the owners in the accession, mistaken-improvers-of-land, and adverse possession contexts, the unsuccessful future interest holder in ameliorative waste cases is typically not being dispossessed (e.g., she may have exclusive possession of the property when the life tenancy ends, just in altered form). Moreover, while the accession and mistaken improver doctrines require the improver's good faith and significant value increase, ameliorative waste does not, perhaps because the future interest holder is not facing dispossession.

The defining features of many of these improvement doctrines can be understood as responding to potential costs. While improvement doctrines attempt to address various equity and efficiency concerns, they may nonetheless impose certain systemic costs, including: the failure to account for the property owner's idiosyncratic value, undermining expectations of stability in possession; encouraging opportunism by "improvers" who try to avoid bargaining *ex ante*; and increased need for judicial assessment and the administrative costs of that assessment.¹²⁷ Requirements like good faith and significant improvement attempt to address or mitigate at least some of these costs. For example, courts have explicitly invoked the concern of discouraging opportunism when imposing a mental state or good faith requirement. Similarly, the requirement of significant value increase appears (at least implicitly) to acknowledge opportunism concerns and assessment costs—it deters cases involving minor or marginal improvement. The discussion below addresses these two features of improvement in greater depth.

1. Good Faith

One key reason courts (and legislatures) impose a good faith requirement in many of these unauthorized improvement contexts is the worry that

¹²⁷ See Newman, *supra* note 106, at 82; Sterk, *supra* note 113, at 1313.

absent such a requirement would-be improvers would not even try bargaining ex ante with owners. Where good faith is required, it can act as a check on opportunistic behavior.¹²⁸ But what does “good faith” mean? A good faith standard premised on “actual knowledge” would mire a “court[] in difficult assessments about the user’s actual knowledge, while simultaneously creating perverse incentives not to search—even when search costs are low.”¹²⁹ The definition of “good faith” in many of these cases is therefore tethered to a notion of reasonable search regarding the scope of property rights. Courts require improvers to do what a reasonably diligent person would have done—consult public records and contact the owner of record to get permission.¹³⁰ The role of good faith “is to weed out deliberate takings without imposing a standard so high that it leads to wasteful search costs or foregone improvement.”¹³¹

Thus, in *Wetherbee*, the court concluded the unauthorized improver acted in good faith when he went onto Green’s land armed with a license that turned out to be faulty. Good faith in this case meant Wetherbee acted reasonably in believing that he had permission from the landowner to chop down the wood.¹³² Similarly, in *Somerville v. Jacobs*,¹³³ an improver who relied on an inaccurate survey when building an entire building on an adjoining lot acted reasonably—in “good faith”—by going forward without commissioning additional surveys.¹³⁴

Ideally, then, the good faith requirement operates with an eye toward deterring easy opportunism without encouraging wasteful searches into the scope and boundaries of property rights. But while pegging good faith to reasonableness of avoidance “avoids th[e] problem of perverse incentives,” even this definition can trigger unnecessary judicial determination costs.¹³⁵

¹²⁸ Merrill, *supra* note 88, at 1152 (“There are sound reasons for treating intentional dispossession [of property] as potentially a more serious social problem, both from a moral and an economic point of view, and judges and juries seem to share this intuition.”).

¹²⁹ Sterk, *supra* note 113, at 1313 (footnote omitted).

¹³⁰ Newman, *supra* note 106, at 92.

¹³¹ *Id.*

¹³² *Wetherbee v. Green*, 22 Mich. 311, 320 (1871).

¹³³ 170 S.E.2d 805 (W. Va. 1969).

¹³⁴ *Id.* at 812-13.

¹³⁵ Sterk, *supra* note 113, at 1313-14 (noting that “whether a search would be efficient [and thus reasonable] is not always clear,” and “a rule that requires courts to evaluate the reasonableness of a decision not to search creates judicial-determination costs unnecessary in a pure liability-rule regime or in a property-rule regime”); *see also* Merrill, *supra* note 88, at 1143 (noting that good faith rules can increase administrative costs, especially where there is not some “general behavioral proxy for good faith”).

2. Valuing the Fact and Significance of Improvement

In addition to good faith, most of these improvement doctrines impose a requirement that the unauthorized improvement be of some significance. A principal difficulty of governance regimes involves identifying the particular uses that qualify for access. In the context of improvement doctrines, that means not only identifying good faith on the part of improvers but also gauging both the fact and significance of “improvement.”

In many of these contexts, courts assess “improvement” by comparing the value of the resource before and after the second-comer’s unauthorized acts. In the traditional property context “surprisingly few cases have construed the term ‘improvement,’ probably because it is a relatively uncomplicated concept” in that area.¹³⁶ However, a showing of minor or marginal improvement is generally insufficient to convince courts to depart from property rule protection—at least in the mistaken-improver-of-land and accession contexts. In the mistaken-improver-of-land context, “[m]any of the betterment acts limit compensable improvements to those that are ‘permanent,’ ‘lasting,’ or ‘valuable.’”¹³⁷ More emphatically, in the accession context, courts insist on a significant disparity of value when comparing the resource before and after the improver’s efforts.

For example, the Michigan Supreme Court explained the importance of this feature in *Isle Royale Mining Co. v. Hertin*,¹³⁸ another case involving cut lumber that came just six years after *Wetherbee*. In *Isle Royale Mining*, Justice Cooley (by this time, Chief Justice) wrote for the court in denying two purported improvers compensation for their labor in mistakenly cutting down trees on someone else’s land. The court refused to apply the doctrine of accession, explaining: “[T]here is no such disparity in value between the standing trees and the cord wood in this case as was found to exist between the trees and the hoops in *Wetherbee v. Green*.”¹³⁹ The court was particularly concerned with the invitation for opportunism and the “premium to heedlessness and blunders” that would result absent a more onerous requirement of improvement.¹⁴⁰

In the accession and mistaken-improver-of-land contexts, the requirement of significant or substantial improvement helps address opportunism concerns. Such a requirement may also reduce judicial assessment costs, as it narrows application of the doctrine to those cases where the second-comer’s value contribution is demonstrably significant, instead of minor or marginal. A significance requirement can thus “screen out a significant

¹³⁶ Dickinson, *supra* note 63, at 62.

¹³⁷ *Id.*; see *Vernon v. McEntire*, 356 S.W.2d 13, 14 (Ark. 1962) (recovery denied when improver spent \$2,000 without increasing land’s value).

¹³⁸ 37 Mich. 332, 333-34 (1877).

¹³⁹ *Id.* at 337.

¹⁴⁰ *Id.* at 338.

proportion of economically trivial improvements for which the cost and uncertainty of liability-rule protection may not be justified.”¹⁴¹

III. THE IMPROVER IN INTELLECTUAL PROPERTY LAW

The preceding Part explored the disparate tangible property law doctrines that fall under the umbrella of “improvement doctrines,” the concerns motivating those doctrines as reflected in judicial and academic commentary, and certain defining features that aim (at least in theory, though not always successfully in practice) to mitigate some of the costs associated with governance regimes.

This Part suggests that while “improvement” plays some role in the pre-grant stage of patent law (and to a far lesser degree, the pre-grant stage of copyright), it is largely absent from the post-grant stage. That is, intellectual property law rarely alters liability or remedy determinations due to a second-comer’s unauthorized “improvement” of an existing invention or expressive work. While a few doctrines in patent and copyright, like the “reverse doctrine of equivalents” in patent law and the “transformative use” category of the “fair use” defense in copyright can provide some incidental relief to unauthorized improvers, they are not expressly designed to do so and thus fall short.

In the course of exploring these “quasi-improvement” doctrines in intellectual property, this Article considers why explicit consideration of unauthorized “improvement” is largely absent from intellectual property law’s post-grant stage. In particular, it addresses the difficulties of identifying and valuing “improvement” in the context of intellectual property—difficulties that are largely (though not entirely) absent in the tangible property context. Then it considers the extent to which the equity and efficiency concerns motivating improvement doctrines in the traditional property context apply to intellectual property. Significantly, the equity and efficiency concerns motivating improvement doctrines in the traditional property context apply with greater force in the intellectual property context because of the uncertainty of intellectual property boundaries and the greater societal consequences associated with bargaining breakdown.

A. *Understanding Improvement in Intellectual Property*

Traditional property’s improvement doctrines consider “improvement” in a fairly straightforward way. Courts determine whether an “improvement” has occurred in reference to a particular, tangible “thing”—e.g., a parcel of land, a pile of wood. That “thing” is the locus of improvement, the

¹⁴¹ Lee, *supra* note 8, at 205.

site upon which a court measures the relative value and significance of the second-comer's efforts. And the measurement task usually entails a comparison of the fair market value of the thing before and after the unauthorized acts occurred.

A comparable "thing" is harder to pin down in the context of intellectual property. To be sure, there is often a physical embodiment of the originator's inventive or creative efforts—e.g., a novel, a painting, a pencil sharpener, or a pill that alleviates indigestion. But the boundaries of the originator's intellectual property right are not limited to this "thing." Instead, the contours of an intellectual property right are often fuzzy, extending not just to an exact replica of an expressive work or invention but even to similar works and inventions.¹⁴² Part of intellectual property law's task is to define the boundaries of protectable subject matter—i.e., to determine the proper subject and scope of the intellectual property right.

Both the relative thing-less-ness of an intellectual property right and the fact that its value derives from the right to exclude others from freely appropriating it makes consideration of "improvement" less straightforward. "Improvement" in the context of intellectual property is thus unlikely to have the uniform definition that it does in traditional property law's improvement doctrines (i.e., an increase in the fair market value of a particular thing that is attributable to the second-comer's efforts). And given the array of subject matter that patent and copyright law are designed to protect, no single definition of "improvement" is likely to map seamlessly onto both. Yet, despite the difficulties of defining and gauging "improvement" in the intellectual property context, there can be little question that facilitating progress in the inventive and creative spheres is the ultimate objective of domestic intellectual property law. Indeed, the unauthorized "improver" is an important character in that story.

The Subsections that follow address the basic contours of patent and copyright law and the uncertain nature of patent and copyright boundaries, the general role of "improvement" within patent and copyright, and the extent to which unauthorized improvement is considered by courts to either excuse a would-be infringer from liability or depart from property rule protection at the remedies stage.

¹⁴² See, e.g., MERGES, *supra* note 8, at 59; see also Carrier, *supra* note 8, at 33 ("An analogous right to exclude in property law would grant landowners the right to exclude others from not only their land, but also other, similar land.").

1. Patent

- a. *Patent Law Basics and the Importance of “Claims”*

Section 101 of the Patent Act provides that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent,” subject to the various requirements of patentability.¹⁴³ For patent protection, an inventor must apply to the Patent and Trademark Office (“PTO”) and successfully demonstrate that her invention is useful, novel (i.e., different from the prior art), nonobvious (i.e., more than a trivial step beyond the prior art), and sufficiently described and enabled in the application so that others skilled in the relevant art can understand, make, and use it.¹⁴⁴ If successful, a patent issues and the patentee can exclude unauthorized others from making, using, selling, offering to sell, or importing the patented invention for a term that usually lasts twenty years from the date of filing.¹⁴⁵ Despite this application process, courts invalidate “nearly half of the patents that are litigated to final judgment.”¹⁴⁶ Thus, the existence of a patent does not offer much certainty with respect to validity of that patent.

Then there is the more vexing question of what exactly a patent covers—the protected “invention.” A patent includes a written description of what the inventor has created and concludes with specific “claims”—single, numbered sentences that distinctly set out the boundaries of the invention.¹⁴⁷ The *claims* define the scope of the patent right, not the specific product or process that the patent owner has actually built or made—the specific “embodiment.” Claims are often analogized to a deed that describes the “metes and bounds” of real property. Yet the analogy is misleading, because boundaries set by language are inherently messier than physical boundaries, the former subject to multiple meanings and interpretations.¹⁴⁸

Patent infringement analysis looks to the claims rather than what the patentee has built or is selling. To infringe on a patent, the accused product or process must contain each and every element identified in the patent claim (or its equivalent).¹⁴⁹ As a result, an accused product can “literally infringe”—i.e., fall within the literal language of a claim—even if the defendant is selling a different product than the inventor is, or if the defendant

¹⁴³ 35 U.S.C. § 101 (2006).

¹⁴⁴ *Id.* §§ 101-103, 112.

¹⁴⁵ *Id.* §§ 154, 271.

¹⁴⁶ Sterk, *supra* note 113, at 1332; *see also* John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 *AIPLA Q.J.* 185, 191-92 (1998).

¹⁴⁷ 35 U.S.C. § 112.

¹⁴⁸ *See* Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 *HARV. J.L. & TECH.* 1, 2 (2001).

¹⁴⁹ *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29-30 (1997).

didn't rely on the patented invention in creating the accused device. Notably, patent law does not recognize independent creation as an infringement defense.¹⁵⁰ And even where a product or process does not literally infringe the claims of a patent, the doctrine of equivalents ("DOE") can expand the reach of a patent to encompass "insubstantial differences."¹⁵¹ In this way, "patent claims may reach new and unanticipated inventions made after the patent issues."¹⁵² Thus, potential users face significant uncertainty regarding the scope of a patent and whether it encompasses their desired uses.

b. *The Role of "Improvement" in Patent Law*

To be sure, considerations of "improvement" operate at the pre-grant stage, embedded in the requirements for obtaining a patent. For example, the subject matter of patent law extends specifically to "new and useful improvement[s]" of existing inventions,¹⁵³ though the term "improvement" is undefined. And patent requirements such as novelty and nonobviousness ask whether the patentee has added value to what already exists. Thus, the PTO's decision to issue a patent and subsequent decisions regarding patent validity necessitate some consideration of improvement—even improvements of existing inventions that were not authorized by the original patentee.¹⁵⁴

By contrast, patent infringement determinations do not take unauthorized improvement into account. That is, in assessing patent infringement, courts generally do not consider the value of the infringer's contribution—for example, if an existing product or process is made more efficient or commercially valuable.¹⁵⁵ Since it is the language of the patent's claims, rather than what the inventor has actually built, that defines the boundaries of the right to exclude, an inventor can expand the bounds of his patent right by drafting broad claims. To be sure, a patentee's ability to draft broad claims is cabined by the various requirements of patentability (e.g., novelty,

¹⁵⁰ See Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 525-33 (2004).

¹⁵¹ The DOE originated to provide patentees with relief against those imitators who would avoid literal infringement by changing an insubstantial aspect of the invention. In recent years, a number of scholars have noted the doctrine's decreased application. See John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955, 959 (2007).

¹⁵² Lemley *supra* note 39, at 1005.

¹⁵³ 35 U.S.C. § 101 (2006).

¹⁵⁴ Provided that an unauthorized improver meets the requirements of patentability, the failure to obtain a license from the patentee will not stand in the way of her getting a patent for the improvement. But she will not be able to practice the improvement without a license from the patentee. See *infra* text accompanying notes 166-167.

¹⁵⁵ Lemley, *supra* note 39, at 1006-07.

nonobviousness, enablement, written description).¹⁵⁶ Provided these requirements are met and a patent issues, however, subsequent innovators that seek to incorporate or build upon the patented invention must be careful to avoid infringing upon the claims' literal terrain or must secure a license from the patent owner to practice the patent.

But sometimes, subsequent innovators cannot avoid falling within the claims' literal terrain, because the claims are broadly defined “or because economic or technical necessity requires that the improver hew closely to the work of the original creator in some basic respect.”¹⁵⁷ For example, suppose the subsequent innovation “consists of additions to the basic structure [of a device] claimed in the original patent”—even if the patentee never foresaw those additions, the subsequent innovator will not escape infringement.¹⁵⁸ Or where the original patentee successfully claimed “an entire class of products” in the first instance—such broad claim language will allow the first inventor to capture new “species not conceived of at the time of the first patent.”¹⁵⁹ In this way, “clever lawyering can often produce a patent claim that covers more technological ground than is truly warranted by the underlying invention.”¹⁶⁰ Similarly, “a patent on a new product will extend to new and unanticipated uses of that product.”¹⁶¹

Patents can thus frustrate cumulative innovation. Cumulative innovation is not a monolithic concept. In patent law, it can mean using patented inventions “as inputs into producing other inventions.”¹⁶² Or it can mean finding a new use for a patented invention.¹⁶³ It also can mean coming up with a more efficient or better functioning version of an existing invention—e.g., “when a pioneer inventor patents some broad technological ‘genus’ that is then infringed by a subsequent, improved ‘species’ falling within that genus.”¹⁶⁴ In this way, the later innovator “‘designs over’ an existing

¹⁵⁶ See Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 840 (1990); see also Lemley, *supra* note 39, at 1001-02.

¹⁵⁷ Lemley, *supra* note 39, at 991.

¹⁵⁸ *Id.* at 1009.

¹⁵⁹ *Id.*

¹⁶⁰ Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1603 (2009).

¹⁶¹ Lemley, *supra* note 39, at 1009 (emphasis omitted); see also *B.G. Corp. v. Walter Kidde & Co.*, 79 F.2d 20, 22 (2d Cir. 1935) (holding that spark plug inventor could control use of spark plugs in airplanes, even though he didn't anticipate that use when he invented it).

¹⁶² Lee, *supra* note 8, at 184. Some commentators have referred to interference with this kind of innovation as an “intragenerational bottleneck,” which “occurs when one product contains multiple patented components and one of the patent holders refuses to license one of the parts, thereby preventing the practice of the [product].” Carrier, *supra* note 8, at 46; see also Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1657-58 (2003).

¹⁶³ Lee, *supra* note 8, at 184.

¹⁶⁴ *Id.*

patent,” perhaps without any awareness that the prior invention exists or is patented.¹⁶⁵

In each of these patent “improvement” scenarios, the subsequent innovator’s contribution may be deemed significant enough to merit a patent on the improvement, but the subsequent innovator cannot practice the patent absent a license from original patentee. Provided licensing markets operate efficiently, subsequent innovators can obtain licenses from originators, and improvements will find their way to the marketplace. And as Mark Lemley has observed, where the subsequent innovator has a patent of her own on the improvement, she comes into the negotiation game with some power of her own because the original patentee cannot practice the improvement without getting the improver’s permission.¹⁶⁶ This so-called “blocking patents” situation is thought to encourage a cross-licensing agreement between the parties, so both can practice the improved invention.¹⁶⁷

However, a number of scholars have persuasively illustrated the various challenges to efficient licensing which can impede holders of “blocking patents” from successfully negotiating a license. These challenges include: identifying the relevant parties; uncertainty as to patents’ value and scope; and strategic behavior that is exacerbated in the context of bilateral monopolies and can obstruct agreement, even where there is a cooperative surplus.¹⁶⁸ Absent a license from the originator, the subsequent innovator whose contribution has been deemed significant enough to merit a patent is out of luck; she cannot practice the improvement patent and reap the benefits of her productive efforts.

¹⁶⁵ *Id.* Commentators have referred to interference with this kind of cumulative innovation as an “intergenerational bottleneck,” which occurs where “each product generation builds on its predecessor.” Carrier, *supra* note 8, at 46; *see also* Burk & Lemley, *supra* note 162, at 1657-58.

¹⁶⁶ Mark Lemley offers a useful framework for understanding how patent law differentiates between “minor” and more “significant” technological improvements. He defines “minor” technological improvements as those that fail to satisfy the requirements of patentability, while “significant” improvements qualify for a patent of their own. Accordingly, “minor” and “significant” improvers have differential bargaining power with the underlying patent holder. Lemley, *supra* note 39, at 1007-13.

¹⁶⁷ *Id.* at 1008-10.

¹⁶⁸ *See, e.g.*, Lee, *supra* note 8, at 187-89; Lemley, *supra* note 39, at 1048-61; Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75, 84-91 (1994) (describing licensing failures between pioneer patent holders and improvers in the early radio and steel industries and the resulting social welfare losses). For further discussion of these concerns and how they are exacerbated by property rules in the patent context, *see infra* Part III.B.1.

c. *The Reverse Doctrine of Equivalents: A “Quasi-Improvement” Doctrine?*

If a subsequent innovator who makes a minor or even significant contribution to an existing invention is ultimately at the mercy of the originator, what about a truly “radical” contribution to existing patented technology? Commentators have pointed to one existing patent doctrine, the “reverse doctrine of equivalents” (“RDOE”), as a useful “policy lever,” a mechanism by which courts can excuse “radical” improvements from infringement liability.¹⁶⁹ In practice, however, the RDOE does not focus directly on the question of improvement, and in any event is rarely utilized by courts.

The Supreme Court introduced the RDOE in *Westinghouse v. Boyden Power Brake Co.*¹⁷⁰ Boyden was accused of infringing Westinghouse’s patent on a train brake.¹⁷¹ Boyden’s allegedly infringing brake offered vastly superior stopping power compared to its predecessors, allowing the long trains of the nineteenth century to be operated more safely. Specifically, the Boyden brake utilized a mechanism for pushing compressed air into the brake system from both the central reservoir and the air reservoirs in each brake cylinder.¹⁷² Unfortunately for Boyden, Westinghouse’s patent was worded quite broadly, and Boyden’s improvement fell within the literal language of Westinghouse’s patent claim. The Court refused to find infringement, however, setting forth an exception to liability based on the fact that Boyden’s invention was “a manifest departure from the principle of the Westinghouse patent.”¹⁷³

Under the RDOE, a literal infringer can be excused from liability where her product “is so far changed in principle from a patented article that it performs the same or a similar function in a substantially different way, but nevertheless falls within the literal words of the claim.”¹⁷⁴ Commentators have suggested that in the context of radical improvements (e.g., a train brake with far superior stopping capability), courts should be unwilling to tolerate the possibility of bargaining breakdown and the resulting dampening of incentives for inventors to improve radically on existing patented technologies.¹⁷⁵ They suggest courts can use the RDOE as a “policy

¹⁶⁹ See, e.g., Lemley, *supra* note 39, at 1010-13; see also Burk & Lemley, *supra* note 162, at 1657-58; Merges, *supra* note 168, at 75.

¹⁷⁰ 170 U.S. 537, 546 (1898).

¹⁷¹ George Westinghouse, the patentee, had invented a train brake in 1868 that utilized a central reservoir of compressed air for stopping power. *Id.* at 545-46

¹⁷² *Id.* at 545, 561-63.

¹⁷³ *Id.* at 572-73.

¹⁷⁴ Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 608-09 (1950).

¹⁷⁵ See, e.g., Lemley, *supra* note 39, at 1010-13; see also Burk & Lemley, *supra* note 162, at 1657-58; Merges, *supra* note 168, at 84-91.

lever” to “benefit[] radical improvers at the expense of the original patentee, and so encourage[] radical improvements, just as the blocking patents rule provides some lesser encouragement to significant improvements.”¹⁷⁶

While the RDOE has inspired such scholarly commentary, in practice the doctrine is said to be “‘seldom-used’ and largely moribund.”¹⁷⁷ In 2002, the Federal Circuit appeared to sound the RDOE’s death knell,¹⁷⁸ but it has since backed away from such forceful disavowals of the RDOE’s continuing applicability. Recently, in *Depuy Spine, Inc. v. Medtronic Sofamore Danek, Inc.*,¹⁷⁹ the Federal Circuit recognized the continuing viability of the doctrine but nonetheless emphasized the rarity of its application. The Federal Circuit suggested that this rarity was due to the seemingly insurmountable requirement of fundamental difference from the operating principle of the patented invention: “Because the [RDOE] requires a fundamental change in the basic principle by which the device operates, the doctrine is rarely invoked and virtually never sustained.”¹⁸⁰ Thus, even if the RDOE exists in theory as a doctrine available to “radical” improvers, given such statements by the Federal Circuit it is unlikely to be a successful one in practice.¹⁸¹

Moreover, even though scholars point to the RDOE as a doctrine that can protect the radical improver, a court’s RDOE analysis is not an explicit consideration of improvement. Rather, in practice, the inquiry is a more formalistic assessment of difference. In determining whether the RDOE applies to preclude a finding of literal infringement, district courts consider: “(1) the principle of the claimed invention; (2) the principle of the accused product; (3) the degree of change in the principle of the accused product from that of the claimed invention; and (4) whether the accused product performs in a substantially different way.”¹⁸² In assessing “[t]he principle of the claimed invention,” courts refer primarily to the claim language—not to the specific product produced by the patent owner or preferred embodi-

¹⁷⁶ Lemley, *supra* note 39, at 1012-13.

¹⁷⁷ Lee, *supra* note 8 at 189; *see also* Merges, *supra* note 168, at 91.

¹⁷⁸ *See* Tate Access Floors, Inc. v. Interface Architectural Res., Inc., 279 F.3d 1357, 1368 (Fed. Cir. 2002) (“Not once has this court affirmed a decision finding noninfringement based on the reverse doctrine of equivalents. And with good reason: when Congress enacted 35 U.S.C. § 112, after the decision in *Graver Tank*, it imposed requirements . . . that are co-extensive with the broadest possible reach of the reverse doctrine of equivalents.”). As subsequent commentators have noted, it is doubtful “given the vagueness of claims and the breadth with which courts often interpret them,” that the requirements of § 112 “provide the same safeguard as the reverse doctrine of equivalents.” Lee, *supra* note 8, at 189.

¹⁷⁹ 567 F.3d 1314 (Fed. Cir. 2009). In this case, the district court imposed a significant penalty on the defendant for raising an RDOE argument. The Federal Circuit reversed, explaining that “the unusual nature of the [RDOE] is not itself a reason to sanction a party for invoking it. The Supreme Court has recognized it to be a viable defense, even if it is rarely asserted.” *Id.* at 1338-39.

¹⁸⁰ *Id.* at 1338.

¹⁸¹ *See* Lee, *supra* note 8, at 189.

¹⁸² *Ciena Corp. v. Corvis Corp.*, 334 F. Supp. 2d 598, 604-05 (D. Del. 2004).

ments described in the specification.¹⁸³ Thus, the analysis seems to be a circular one, in that the more broadly written the claims the broader the “principle” of the claimed invention, and the less likely an improver will be able to demonstrate sufficient difference from that inventive principle. So even though the purported purpose of the RDOE is “to prevent unwarranted extension of the claims beyond a fair scope of the patentee’s invention,”¹⁸⁴ the current incarnation of the doctrine makes it an unlikely vehicle for doing so.

Interestingly, in the case that birthed the doctrine, *Boyden Brake*, the Supreme Court seemed, at least implicitly, to consider something beyond difference and akin to “improvement,” noting:

We are induced to look with more favor upon [the accused] device, *not only because it is . . . a manifest departure from the principle of the Westinghouse patent*, but because it solved at once, in the simplest manner, the problem of quick action, whereas the Westinghouse patent did not prove to be a success until certain additional members had been incorporated into it. . . . If credit be due to Mr. Westinghouse for having invented the function, *Mr. Boyden has certainly exhibited great ingenuity in the discovery of a new and more perfect method of performing such function.*¹⁸⁵

But the RDOE in its current incarnation is, at best, a doctrine that engages the question of improvement infrequently, and even then, indirectly.

d. *Difficulties of Valuation and Post-eBay Trends*

The RDOE is an equitable doctrine that can have an all-or-nothing result. Under it, a literal infringer would be excused from liability. Some commentators have suggested that the stark nature of this result is another reason that courts may be wary of applying it.¹⁸⁶ Perhaps, then, courts’ remedy determinations offer more hospitable ground for unauthorized improvers. Historically, however, courts’ patent remedy determinations have not considered the fact or significance of a defendant’s inventive contribution as a reason to depart from injunctive relief.

It is, of course, true that determining the value of an improver’s contribution relative to the original is a much harder task in the context of intellectual property than tangible property. Valuation difficulties are an oft-invoked reason for preferring injunctive relief, rather than damages, to rem-

¹⁸³ *Id.* at 605 (citing *SRI Int’l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1124 (Fed. Cir. 1985)).

¹⁸⁴ *Id.* at 604 (quoting *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1581 (Fed. Cir. 1991)) (internal quotation marks omitted).

¹⁸⁵ *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 572-73 (1898) (emphasis added).

¹⁸⁶ *See Lee, supra* note 8, at 239.

edy intellectual property infringement.¹⁸⁷ Yet valuation difficulties are, to a significant degree, unavoidable in the context of intellectual property. For example, they suffuse licensing negotiations, settlements, and damage awards for past infringement. Further, the Supreme Court's recent decision in *eBay Inc. v. MercExchange, L.L.C.* suggests that courts cannot avoid the valuation task by automatic resort to injunctive relief in cases of infringement.¹⁸⁸ Notably, Justice Kennedy's concurrence in *eBay* (and its subsequent embrace by some district courts) seems to advocate consideration of at least some kinds of value-increasing acts by the patent infringer.¹⁸⁹

In *eBay Inc. v. MercExchange, L.L.C.*, eBay and its subsidiary Half.com infringed MercExchange's business method patent on an electronic market. The Federal Circuit reversed the district court's denial of permanent injunctive relief for the patentee, "applying its 'general rule that courts will issue permanent injunctions against patent infringement absent exceptional circumstances.'" ¹⁹⁰ The Supreme Court reversed the Federal Circuit, clarifying that even if patents are indeed property, "the creation of a [property] right is distinct from the provision of remedies for violations of that right."¹⁹¹ Thus, the Supreme Court rejected a categorical rule favoring injunctions in infringement actions, in favor of the four-part test that guides courts in assessing the appropriateness of injunctive relief in a wide variety of cases.¹⁹²

The unanimous *eBay* decision rejecting an automatic injunction rule included a pair of dueling concurrences that have generated significant attention—one by Chief Justice Roberts and the other by Justice Kennedy. Chief Justice Roberts's concurrence, joined by Justices Scalia and Ginsburg, suggested that given "the long tradition of equity practice" in patent infringement cases, and "the difficulty of protecting a right to exclude through monetary remedies," injunctive relief would likely predominate as the preferred remedy for patent infringement.¹⁹³

By contrast, Justice Kennedy's concurrence, joined by Justices Stevens, Souter, and Breyer, emphasized that "the existence of a right to ex-

¹⁸⁷ See Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655, 2659-60 (1994).

¹⁸⁸ *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 393-94 (2006).

¹⁸⁹ See Lee, *supra* note 8, at 218-19.

¹⁹⁰ *eBay*, 547 U.S. at 391 (quoting *MercExchange, L.L.C. v. eBay, Inc.*, 401 F.3d 1323, 1339 (Fed. Cir. 2005)).

¹⁹¹ *Id.* at 392.

¹⁹² The test provides:

A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

Id. at 391.

¹⁹³ *Id.* at 395 (Roberts, C.J., concurring) (emphasis omitted).

clude does not dictate the remedy for a violation of that right.”¹⁹⁴ Responding to Chief Justice Roberts’s invocation of historic patent practice, Justice Kennedy pointed to notable shifts in both the nature of patents and patent holders which make many modern cases “quite unlike earlier cases.”¹⁹⁵ In particular, Justice Kennedy highlighted “the potential vagueness and suspect validity” of business method patents, a category largely absent from history, and the particular dangers posed by nonpracticing entities or “patent trolls.”¹⁹⁶ These are firms that “use patents not as a basis for producing and selling goods, but instead, primarily for obtaining license fees.” Moreover, Justice Kennedy noted the potential sufficiency of damages in the context of one kind of cumulative innovation—when a product incorporates a patented component:

When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest.¹⁹⁷

In this particular cumulative innovation context, *eBay* seems to “already embrace[] th[e] notion of comparing the relative values of patented inventions and accused products.”¹⁹⁸ Post-*eBay*, some district “[c]ourts have applied Justice Kennedy’s instruction to deny injunctive relief in cases in which a multifaceted product infringes a patent on a relatively low-value component.”¹⁹⁹ And in doing so, district courts have looked to the economic significance of the product itself relative to the patented component.²⁰⁰ Thus, an inquiry into the infringer’s contribution—i.e., both the fact of “improvement” and its significance—could “focus, where available, on discrete products” that are created and sold.²⁰¹ Recent district court decisions post-*Ebay* offer some suggestion that consideration of certain kinds of unauthorized improvement may begin to play a bigger role in the remedies analysis than has historically been the case.

¹⁹⁴ *Id.* at 396 (Kennedy, J., concurring).

¹⁹⁵ *Id.*

¹⁹⁶ *eBay*, 547 U.S. at 397 (Kennedy, J., concurring). Empirical evidence suggests that “[s]ince the Supreme Court issued its opinion in *eBay*, district courts appear” less likely to grant injunctive relief in cases where the patent holder is a patent troll. John Golden, “*Patent Trolls*” and *Patent Remedies*, 85 TEX. L. REV. 2111, 2113 (2007). A number of commentators have likewise focused their attention on the propriety of injunctive relief as a remedy for patent trolls, a term often applied to patent holders that do not actually practice their patents. *See infra* text accompanying note 290.

¹⁹⁷ *eBay*, 547 U.S. at 396-97 (Kennedy, J., concurring).

¹⁹⁸ Lee, *supra* note 8, at 218-19.

¹⁹⁹ *Id.* at 219.

²⁰⁰ *See infra* text accompanying notes 285-286.

²⁰¹ Lee, *supra* note 8, at 205.

2. Copyright

a. *Copyright Law Basics*

As with patent (and maybe even more so), the boundaries of copyright are notoriously blurry. Copyright protects original works of authorship fixed in a tangible medium of expression—e.g., books, paintings, photographs, songs, computer software, and movies. However, copyright protection lasts for a much longer period of time than patent, usually the author's life plus seventy years.²⁰² A copyright entitles its holder to certain exclusive rights during that time, including the right to reproduce the work; to prepare derivative works based on the original; and to distribute, perform, and display the work to the public.²⁰³

Also, as compared to a patent, a copyright is much easier to get. Copyright does not require a formal application process. Instead, works are protected as soon as they are created.²⁰⁴ Copyright law historically required notice and registration; however, that is no longer the case. This lessening of formalities has made it more difficult for potential users to locate rights-holders.²⁰⁵ While copyright law imposes certain requirements for work to be protectable, they are much less onerous than patent's requirements. For work to be copyrightable, it must satisfy a low threshold of originality (i.e., be independently created and exhibit a "modicum of creativity") and be fixed in a tangible medium of expression.²⁰⁶ Thus, it doesn't take much to demonstrate a valid copyright. The key difficulty is determining the scope of copyright protection—a question that is usually answered in the context of infringement litigation, by comparing the copyrighted work to the allegedly infringing work.

To demonstrate copyright infringement, the plaintiff must first show that the defendant's work was derived (i.e., "copied") from the copyrighted work. Copying can be demonstrated by circumstantial evidence of the defendant's access to the work and similarity between the two works. Because copyright infringement requires copying, independent development of a work is a complete defense—though unintentional, or subconscious, copying is not.²⁰⁷ That copyright law excuses independent creators from liability

²⁰² 17 U.S.C. § 302 (2012).

²⁰³ *Id.* § 106.

²⁰⁴ Registration of a copyrighted work is, however, a prerequisite to filing an infringement action. *Id.* § 411(a).

²⁰⁵ See Sterk, *supra* note 113, at 1327-28.

²⁰⁶ See 17 U.S.C. § 102(a); see also *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345-46, 362 (1991).

²⁰⁷ The derivation requirement does not mean that copyright infringement must be knowing or willful. Copyright is a strict liability offense, meaning that infringement may be entirely innocent. See, e.g., *Bright Tunes Music Corp. v. Harrisongs Music, Ltd.*, 420 F. Supp. 177, 180-81 (S.D.N.Y. 1976)

is a significant difference from patent law.²⁰⁸ In addition to copying, the plaintiff must show that the defendant’s work is “substantially similar” to protected expression in the copyrighted work. Notably, copyright protection extends only to the author’s original *expression* of a work, not to the underlying ideas, facts, or functional elements of a work—a significant restriction on subject matter and scope that is notoriously difficult to apply in practice.²⁰⁹

In the easiest infringement case, the defendant copies verbatim the plaintiff’s entire work. But infringement is not limited to such cases. It is possible to infringe a copyright by “[c]opying even a hundred words from a book, or a few seconds of music from a song,” depending on the qualitative significance of that protected expression.²¹⁰ It is also possible to infringe a copyright by “taking only the ‘nonliteral’ elements of a work, such as the plot outline of a movie.”²¹¹ Thus, for potential users, there is considerable uncertainty with respect to the scope of a copyrighted work.

The uncertainty with respect to scope of a copyright is further compounded by copyright’s fair use doctrine (described in depth below). Defendants can raise the affirmative defense of fair use, an equitable defense that excuses infringement. Oft described as “the most troublesome [doctrine] in the whole law of copyright,”²¹² fair use is undoubtedly “the most important—and amorphous—limitation on the otherwise extraordinarily broad rights granted to copyright owners.”²¹³

b. *The Role of “Improvement” in Copyright Law*

i. Originality and *Bleistein*’s Proscription

Unlike patent law, which considers “improvement” to a fair degree at the pre-grant stage (i.e., in determining whether a patent should issue), copyright law has no formal application requirement and imposes a very low “originality” requirement. Copyright’s originality requirement asks only whether the work was independently created (i.e., not copied) and exhibits a

(finding that George Harrison’s unintentional copying of “He’s So Fine” in his composition “My Sweet Lord” was infringement), *aff’d sub nom.* ABKCO Music, Inc. v. Harrison’s Music, Ltd., 722 F.2d 988 (2d Cir. 1983).

²⁰⁸ See *supra* text accompanying note 150.

²⁰⁹ See 17 U.S.C. § 102(b).

²¹⁰ Lemley, *supra* note 39, at 1015 (footnote omitted).

²¹¹ *Id.* at 1016.

²¹² Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 475 (1984) (Blackmun, J., dissenting) (quoting *Dellar v. Samuel Goldwyn, Inc.*, 104 F.2d 661, 662 (2d Cir. 1939) (per curiam)) (internal quotation marks omitted).

²¹³ Barton Beebe, *An Empirical Study of U.S. Copyright Fair Use Opinions, 1978-2005*, 156 U. PA. L. REV. 549, 551 (2008); see also *infra* Part III.A.2.c.

“modicum of creativity” beyond works that already exist. The latter phrase is one that, while undefined, appears to include all but “a narrow category of works in which the creative spark is utterly lacking or so trivial as to be virtually nonexistent.”²¹⁴ To qualify for copyright, then, a work of authorship need not be novel or an “improvement” on existing works in the onerous patent-sense, just slightly distinctive over and above any preexisting material on which it relies.²¹⁵

Copyright’s undemanding originality requirement also embodies the so-called “aesthetic nondiscrimination” principle, a principle first espoused by Justice Holmes in *Bleistein v. Donaldson Lithographing Co.*²¹⁶ Since *Bleistein*, courts have generally declined to impose any content-based limitations on the types of works available for copyright protection on the basis of artistic or literary merit. In *Bleistein*, the works at issue were circus advertisement posters that featured figures of performers.²¹⁷ The lower court held the works’ copyrights invalid because they had “no intrinsic value other than [their] function as an advertisement.”²¹⁸ The Supreme Court reversed, with Justice Holmes famously observing:

It would be a dangerous undertaking for persons trained only to the law to constitute themselves final judges of the worth of [works] [I]f they command the interest of any public, they have a commercial value—it would be bold to say that they have not an aesthetic and educational value—and the taste of any public is not to be treated with contempt.²¹⁹

Bleistein underscores a judicial unease with certain kinds of value judgments in the copyright context—e.g., aesthetic judgments—particularly when gauging the availability of copyright protection. This case highlights a dilemma that continues to confront copyright: given the statute’s underlying purpose, what kinds of works should copyright law encourage?²²⁰ Congressional authority to legislate in the spheres of both patent and copyright stems from the same constitutional provision—to “promote the *Progress* of Science and useful Arts.”²²¹ But in contrast with patent law, consideration of “improvement” is virtually absent from the pre-grant stage of copyright.

²¹⁴ Feist Publ’ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345, 359 (1991); see also Gideon Parchomovsky & Alex Stein, *Originality*, 95 VA. L. REV. 1505, 1506 (2009) (“Protection is granted indiscriminately to all expressive works, whether highly or only minimally original.”).

²¹⁵ See MERGES, ET AL., *supra* note 33, at 421.

²¹⁶ 188 U.S. 239, 251-52 (1903).

²¹⁷ *Id.* at 248.

²¹⁸ *Courier Lithographing Co. v. Donaldson Lithographing Co.*, 104 F. 993, 996 (6th Cir. 1900), *rev’d sub nom. Bleistein v. Donaldson Lithographic Co.*, 188 U.S. at 239.

²¹⁹ *Bleistein*, 188 U.S. at 251-52.

²²⁰ MERGES ET AL., *supra* note 33, at 419.

²²¹ U.S. CONST. art. I, § 8, cl. 8 (emphasis added).

ii. Derivative Works

Historically, copyright law protected only against production of substantially similar works in the same medium as the original. But over time, copyright law expanded to provide copyright owners with protection against unauthorized adaptations and translations of the work in a wide range of media.²²² Not only can a copyright owner prevent unauthorized reproductions but she also has the right to control “derivative works.”²²³

A “derivative work” is defined in the Copyright Act to include “any . . . form in which a work may be recast, transformed, or adapted,” including translations, dramatizations, motion picture versions, abridgements, and the like.²²⁴ The same two-part infringement test and the attendant limitations on scope (e.g., idea/expression dichotomy) apply to cases involving unauthorized derivative works.²²⁵ Copyright owners can use the derivative works right to prevent others from adapting their works to new markets, whether or not the copyright owners considered those uses when creating their works. In this way, the derivative works right “make[s] it clear that copyright law is intended to reach improvers as well as counterfeiters.”²²⁶

Derivative works may involve significant effort by the second-comer. For example, an unauthorized adapter may have expended significant effort and original content (e.g., new text, characters and plot twists) in adapting a copyrighted book into a screenplay, or a screenplay into a movie, or creating a new story based on the characters of an original work. But if the adaptation is later deemed to have infringed the copyrighted work on which it was based, the adapter may not be entitled to any copyright protection for her work—even those new and original aspects that she contributed.²²⁷ Thus, unlike the “blocking patents” scenario, where one can obtain a patent

²²² MERGES ET AL., *supra* note 33, at 556 (noting that entities like Disney “have been particularly effective in leveraging their copyrights in characters and films to television series, toys, commercial tie-ins, and theme parks”).

²²³ 17 U.S.C. § 106(2) (2012).

²²⁴ *Id.* § 101.

²²⁵ See *Litchfield v. Spielberg*, 736 F.2d 1352, 1357 (9th Cir. 1984). Because infringement of the derivative works right requires satisfaction of the same test—for example, copying and substantial similarity—some have questioned what Section 106(2) really adds to the rights already granted under Section 106(1)’s reproduction right. Lemley, *supra* note 39, at 1018.

²²⁶ Lemley, *supra* note 39, at 1019.

²²⁷ See *Anderson v. Stallone*, No. 87-0592 WDKGX, 1989 WL 206431, at *8-11 (C.D. Cal. Apr. 25, 1989) (holding that a screenwriter’s unauthorized use of the “Rocky Balboa” character to create a sequel infringed Stallone’s copyright in the “Rocky characters,” and the screenwriter had no copyright in his script, even the original aspects). Infringing derivative works may be copyrightable in part, if the infringing material is easily separated from other parts of the work. See 17 U.S.C. § 103(a) (“[P]rotection for a work employing preexisting material in which copyright subsists does not extend to any part of the work in which such material has been used unlawfully.” (emphasis added)).

on the unauthorized improvement, in the context of an unauthorized derivative work no analogous “blocking copyrights” doctrine allows the improver to obtain copyright protection for the original parts of her work. Thus, “the original copyright owner [can] capture the value of even significant improvements made by others.”²²⁸

c. *“Transformative Use” Doctrine: A “Quasi-Improvement” Doctrine?*

The affirmative defense of fair use does permit courts to engage in value judgments about the merits of an otherwise infringing use in the context of liability determinations. While Section 107 of the Copyright Act does not precisely define “fair use,” it lists four nonexclusive factors that courts must consider in assessing whether a defendant’s otherwise infringing use of the copyrighted work is nonetheless excused from liability:

- (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit education purposes;
- (2) the nature of the copyrighted work;
- (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- (4) the effect of the use upon the potential market for or value of the copyrighted work.²²⁹

In addition, the preamble to Section 107 describes various examples of fair use purposes, including use of the copyrighted work for news reporting, criticism, comment, and certain educational uses of copyrighted works.²³⁰ There are, however, no presumptive categories of fair use, and the four-factor analysis should be engaged in each case.²³¹

Fair use “is not expressly designed to” privilege unauthorized improvement.²³² Historically, the doctrine focused on factor four—the effect of the use on the potential market for or value of the copyrighted work—rather than on the value added by the infringer. A few decades ago, the Supreme Court deemed factor four “the single most important element of fair use,”²³³ and suggested that “[f]air use, when properly applied, is limited to copying by others which does not materially impair the marketability of the

²²⁸ Lemley, *supra* note 39, at 1022-23.

²²⁹ 17 U.S.C. § 107.

²³⁰ *Id.* (“[T]he fair use of a copyrighted work . . . for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright.”).

²³¹ See Mark A. Lemley, Reply, *What’s Different About Intellectual Property?*, 83 TEX. L. REV. 1097, 1101 (2005).

²³² Lemley, *supra* note 39, at 1024.

²³³ Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539, 566 (1985).

work which is copied.”²³⁴ This focus on the market impact includes not just the actual market harm caused by the particular infringement but the potential for lost sales of the original work if the challenged use becomes widespread, as well as the potential adverse impact on the copyright owner’s licensing fees and markets for derivative works.²³⁵ An emphasis on factor four “preclude[s] the possibility that a[n] . . . improvement which competes with the original work, or even with actual or potential licensed derivatives of that work, can nonetheless be a fair use.”²³⁶

But since the Supreme Court’s 1994 decision in *Campbell v. Acuff-Rose Music, Inc.*,²³⁷ much attention has shifted to the first factor and the doctrine of “transformative use.”²³⁸ Thus, to the extent a concept of improvement operates in copyright, it operates implicitly in the context of the fair use’s “transformative use” doctrine. In theory, courts can consider the additional social value generated by the infringer’s unauthorized use of the copyrighted work in factor one determinations of whether “the purpose and character” of the infringer’s use of the copyrighted work is “transformative.”²³⁹

In *Campbell*, the Court considered whether 2 Live Crew’s parody of Roy Orbison’s song “Oh, Pretty Woman” was a fair use.²⁴⁰ The 2 Live Crew version of the song “copied the first line of the original, but thereafter departed markedly from the Orbison lyrics for its own ends.”²⁴¹ In concluding that the Court of Appeals erred in deeming 2 Live Crew’s parodic use presumptively unfair, the Supreme Court laid out the standard for “transformative use”:

The central purpose of this investigation is to see . . . whether the new work merely “superse[d] the objects” of the original creation or instead adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message; it asks, in other words, whether and to what extent the new work is “transformative.”²⁴²

²³⁴ *Id.* at 566-67 (quoting 1 MELVILLE B. NIMMER, NIMMER ON COPYRIGHT § 1.10[D], at 1-87 (1984)) (internal quotation marks omitted).

²³⁵ *Id.* at 566-68.

²³⁶ Lemley, *supra* note 39, at 1025.

²³⁷ 510 U.S. 569 (1994).

²³⁸ Neil Weinstock Netanel, *Making Sense of Fair Use*, 15 LEWIS & CLARK L. REV. 715, 722-23 (2011).

²³⁹ See Lemley, *supra* note 39, at 990-92.

²⁴⁰ *Campbell*, 510 U.S. at 571-72.

²⁴¹ *Id.* at 589. The lyrics of 2 Live Crew’s rendition included phrases like “[b]ig hairy woman” and “[b]ald-headed woman.” *Id.* at 595-96.

²⁴² *Id.* at 579 (second alteration in original) (citations omitted). The Court further noted:

Although such transformative use is not absolutely necessary for a finding of fair use, the goal of copyright, to promote the science and the arts, is generally furthered by the creation of transformative works. Such works thus lie at the heart of the fair use doctrine’s guarantees of breathing space within the confines of copyright, and the more transformative the new

The Court identified certain critical uses like parody as “ha[ving] an obvious claim to transformative value, as . . . [they] can provide social benefit, by shedding light on an earlier work, and, in the process, creating a new one.”²⁴³

Since *Campbell*, the transformative use inquiry has become an important aspect of courts’ fair use analyses. In those cases where the use was deemed transformative, “it exerted nearly dispositive force not simply on the outcome of factor one but on the overall outcome of the fair use test.”²⁴⁴ But the question of when the infringer’s use is “transformative” has proven problematic—riddled with uncertainties and inconsistencies.²⁴⁵

Take, for example, the tenuous distinction courts draw between parody and satire in satisfying the transformative use test. In *Campbell*, the Supreme Court defined “parody” as a work that “use[s] . . . some elements of a prior author’s composition to create a new one that, at least in part, comments on that author’s works.”²⁴⁶ By contrast, if “the commentary has no critical bearing on the substance or style of *the original composition*,” but uses elements of the original to comment on something else, then “the claim to fairness in borrowing from another’s work diminishes accordingly (if it does not vanish), and other factors, like the extent of its commerciality, loom larger.”²⁴⁷

Many commentators have criticized this dubious distinction between parody and satire. Not only can the two be difficult to distinguish in certain cases, but satire is equally capable of adding social meaning and value. For example, in *Dr. Seuss Enterprises, L.P. v. Penguin Books USA, Inc.*,²⁴⁸ the defendant published a book, *The Cat NOT in the Hat*, which borrowed from the style and structure of Dr. Seuss’s children’s book *The Cat in the Hat*, in order to mock the O.J. Simpson murder trial.²⁴⁹ The Ninth Circuit, in a much-criticized opinion, rejected the defendant’s claim of fair use, finding that the defendant’s use was non-transformative satire as opposed to transformative parody because the purpose of the work was to comment on the

work, the less will be the significance of other factors, like commercialism, that may weigh against a finding of fair use.

Id. (footnote omitted) (citations omitted).

²⁴³ *Id.*

²⁴⁴ Beebe, *supra* note 213, at 605.

²⁴⁵ See, e.g., Christopher M. Newman, *Transformation in Property and Copyright*, 56 VILL. L. REV. 251, 251-52 (2011); Rebecca Tushnet, Essay, *Copy This Essay: How Fair Use Doctrine Harms Free Speech and How Copying Serves It*, 114 YALE L.J. 535, 555-56 (2004).

²⁴⁶ *Campbell*, 510 U.S. at 580.

²⁴⁷ *Id.* (emphasis added). In justifying this distinction between parody and satire, the Court explained: “Parody needs to mimic an original to make its point, and so has some claim to use the creation of its victim’s . . . imagination, whereas satire can stand on its own two feet and so requires justification for the very act of borrowing.” *Id.* at 580-81.

²⁴⁸ 109 F.3d 1394 (9th Cir. 1997).

²⁴⁹ *Id.* at 1396.

O.J. Simpson trial, rather than the underlying Dr. Seuss book.²⁵⁰ Alternately, courts may pin the label of “parody” on a defendant’s use that they view as socially valuable but is nonetheless not appropriately characterized as parody—trying to squeeze a square peg into a round definitional hole, so to speak.²⁵¹

Courts’ willingness to apply the label of parody in these cases seems to rest on an implicit assessment of the infringer’s provision of social benefit through the unauthorized use of the copyrighted work. But rather than directly engage the question of social value added by the infringer, courts typically have relied on formal distinctions (e.g., parody versus satire) to resolve the question of transformative use.²⁵² As some scholars have observed, courts’ reliance on formal distinctions in copyright cases may reflect unease with explicit value judgments which is perhaps traceable to *Bleistein*.²⁵³ While this unease may be understandable given the more difficult nature of valuation in the copyright context, it nonetheless has consequences for certain categories of improvers—e.g., satirists. And it obscures what should be the true object of the transformative use inquiry: to assess the value contributed by the infringer.²⁵⁴

²⁵⁰ *Id.* at 1401.

²⁵¹ For example, Parchomovsky and Stein criticize the Eleventh Circuit’s labeling of Alice Randall’s work *The Wind Done Gone* as a parody. Randall’s book borrowed aspects of Margaret Mitchell’s classic novel, *Gone with the Wind*, to retell the story from the perspective of the black slave characters. Parchomovsky and Stein suggest that the book was “not a parody in the conventional sense of the term” and that the court’s categorization “may have done injustice to Randall’s literary achievement and hurt its sales.” Parchomovsky & Stein, *supra* note 214, at 1530.

²⁵² The Second Circuit’s recent decision in *Cariou v. Prince*, 714 F.3d 694 (2d Cir. 2013), however, suggests burgeoning judicial recognition of this overreliance on formal distinctions. In *Cariou*, appropriation artist Richard Prince featured portions of Cariou’s photos in his work. *Id.* at 698. Cariou sued Prince, alleging copyright infringement. *Id.* The district court rejected Prince’s transformative use defense because his work did not “comment on . . . or critically refer back to [Cariou’s work].” *Id.* at 704. The Second Circuit rejected the district court’s interpretation of transformative use doctrine, explaining that there is “no requirement that a work comment on the original . . . in order to be considered transformative.” *Id.* at 706.

²⁵³ See, e.g., Christine Haight Farley, *Judging Art*, 79 TUL. L. REV. 805, 855 (2005) (describing the “doctrine of avoidance” with respect to art); Alfred C. Yen, *Copyright Opinions and Aesthetic Theory*, 71 S. CAL. L. REV. 247, 301-02 (1998).

²⁵⁴ As Merges has observed: “However it is conceptualized, at the heart of the idea of transformative use lies some noteworthy and socially beneficial contribution on the part of the infringer. . . . Transformative use is all about what the *infringer* contributes, the value of what is added.” MERGES, *supra* note 8, at 253. *But see* Shyamkrishna Balganesh, *Foreseeability and Copyright Incentives*, 122 HARV. L. REV. 1569, 1606 (2009) (emphasizing plaintiff’s foreseeability and critiquing the doctrine’s “focus on the defendant, glossing over the uses that the plaintiff might have legitimately expected to control in creating the work”).

B. *Concerns Motivating Property Law's Improvement Doctrines Apply with Equal or Greater Force to Intellectual Property Law*

The equity and efficiency concerns motivating improvement doctrines in the traditional property context apply with greater force in the intellectual property context because: (1) the uncertainties associated with intellectual property boundaries exacerbate strategic behavior and holdup in the context of licensing negotiations; (2) these same uncertainties and the difficulties of locating rights-holders increase search and avoidance costs; and (3) the threat of bargaining breakdown between original owners and unauthorized improvers poses greater third-party consequences in the intellectual property context, because society may be deprived of these inventions and creative works.

1. *Equity Concerns and Deterring Strategic Holdout/"Bargaining Breakdown"*

Commentators have illustrated various barriers to efficient licensing of intellectual property. Notably, strategic bargaining—particularly in the context of bilateral monopolies—can impede agreement, even where a cooperative surplus exists and both parties stand to benefit.²⁵⁵ Even where parties ultimately agree to a license, “the particular division of rents” that occurs in the shadow of a property rule—e.g., an original patentee’s ability to “leverage[] her right to exclude to extract a disproportionate share of rents”—can diminish incentives to improve on existing patented inventions.²⁵⁶ Similar concerns apply in the context of copyright licensing and may in fact be “worse in the copyright context than in the patent context.”²⁵⁷ These efficiency and equity concerns already motivate, to some degree, the reverse doctrine of equivalents, and the increased willingness of courts to depart from property rule protection where the patented product is but a small component of an integrated product.²⁵⁸ Similar “market failure” justifications have been suggested for the doctrine of transformative use.²⁵⁹

²⁵⁵ In the patent context, Mark Lemley, Robert Merges, and Richard Nelson, among others, have described the implications of patent “holdup” and “bargaining breakdown” for various kinds of cumulative innovation. *See, e.g.*, Lemley, *supra* note 39, at 1058-59; Merges, *supra* note 168, at 89-90; Merges & Nelson, *supra* note 156, at 865-66.

²⁵⁶ Lee, *supra* note 8, at 188.

²⁵⁷ Lemley, *supra* note 39, at 1068-69 (noting such reasons as the greater “uncertainty associated with the success of [an expressive] work” and greater likelihood of “copyright owners . . . to object to uses of their work for noneconomic reasons”).

²⁵⁸ *See supra* text accompanying notes 194-197.

²⁵⁹ *See, e.g.*, MERGES, *supra* note 8, at 253 (“Often in cases that accentuate the transformative aspects of an infringement, there is an undercurrent of market failure.”); Wendy J. Gordon, *Fair Use as*

The efficiency and equity concerns, stemming from strategic behavior, that motivate property law's improvement doctrines not only apply with equal force to intellectual property law but are likely exacerbated in the context of intellectual property due to the more amorphous nature of intellectual property rights. This leads to greater uncertainties regarding the value of the right being licensed, which can prevent bargaining parties from reaching agreement. While parties negotiating a license "ideally would base the cost of a license on the value of the right licensed, that value will likely be difficult to determine accurately in the case of unique goods like intellectual property rights."²⁶⁰

Moreover, the fuzziness of intellectual property boundaries makes tailoring of injunctive relief difficult. This in turn can lead to systematic overcompensation of rights holders, which further exacerbates the problems associated with strategic behavior.²⁶¹ Not surprisingly, "because rights holders know that they can obtain an injunction that disadvantages the defendant more than it benefits them, they use that knowledge to drive settlement rates well above the 'benchmark' rate based on the value of the licensed right absent the ability to strategically threaten an injunction."²⁶²

2. Detering Inefficient Search/Avoidance Costs

In addition, the fuzziness of intellectual property boundaries and the difficulties of locating rights-holders result in increased ex ante search and avoidance costs. Given the uncertain scope of a copyright or patent, potential users can face significant difficulty in determining whether their uses infringe. In copyright, for example one can freely appropriate ideas but not copyrighted expression. However, the line between the two is notoriously unclear, as is the application of fair use doctrine.²⁶³ And in the copyright context, potential users may even have trouble finding the appropriate right-holders to bargain with ex ante.²⁶⁴ Unlike patent, copyright protection at-

Market Failure: A Structural and Economic Analysis of the Betamax Case and Its Predecessors, 82 COLUM. L. REV. 1600, 1613-14 (1982).

²⁶⁰ Lemley, *supra* note 39, at 1053.

²⁶¹ Tailoring injunctive relief to the fuzzier boundaries of an intellectual property right is more difficult than for tangible property. Thus, as Mark Lemley and Philip Weiser have recently argued: "[Where] courts cannot easily tailor injunctions to forbid only the prohibited conduct[,] . . . injunctive relief can systematically overcompensate plaintiffs and overdeter defendants, with significant negative consequences for innovation and economic growth." Lemley & Weiser, *supra* note 24, at 785.

²⁶² *Id.* at 795; see also Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 *passim* (2007).

²⁶³ See *supra* Part III.A.2.a.

²⁶⁴ See, e.g., Sterk, *supra* note 113, at 1319; see also Peter S. Menell & Michael J. Meurer, *Notice Failure and Notice Externalities*, 5 J. LEGAL ANALYSIS 1, 18 (2013), available at <http://jla.oxfordjournals.org/content/early/2013/01/03/jla.las019.full.pdf>.

taches automatically to a work once it is fixed in a tangible medium of expression. The “[a]bolition of notice and registration requirements, together with the expanded duration of copyright protection, has significantly increased search costs for potential users.”²⁶⁵

Although patent law’s formal application process, which requires certain disclosures and publication of the invention, lessens the difficulty of finding the relevant right-holder, a potential improver nonetheless faces significant uncertainty about the breadth and validity of existing patent claims.²⁶⁶ Thus, Sterk observes that one of the “reasons to applaud” the Supreme Court’s *eBay* decision, and its holding that injunctive relief should not be automatic in patent cases, is that it “reduces the incentive for potential users to engage in inefficient patent searches.”²⁶⁷

3. Third-Party Externalities and Changed Circumstances

Unlike the tangible property disputes described in Part II, which typically affect only the parties to the dispute, improvements in intellectual property often produce positive externalities—benefits to society that might not be captured or considered by the parties.²⁶⁸ The threat of bargaining breakdown between the original owner and unauthorized improvers poses greater third-party consequences in the intellectual property context, because society may be deprived of these inventions and creative works. The early history of airplane and radio technology in the United States provides vivid examples of the potential costs to society that can result when original patent holders and improvers fail to reach agreement.²⁶⁹

C. *Role of Good Faith*

In the traditional property context, good faith plays an important role in the doctrines of accession, mistaken improver of land, and (in some cases) adverse possession. Courts impose a good faith requirement in those contexts to deter opportunistic behavior. Absent a good faith requirement, the concern is that second-comers would knowingly take land or personal property owned by others without attempting to bargain with owners first. In the tangible property context, this makes sense given the relatively low search and avoidance costs and the owner’s risk of physical dispossession.

²⁶⁵ Sterk, *supra* note 113, at 1328.

²⁶⁶ See *supra* text accompanying notes 143-152.

²⁶⁷ Sterk, *supra* note 113, at 1333.

²⁶⁸ Lemley, *supra* note 39, at 1057-58; see also Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257, 269-70 (2007) (noting the importance of positive externalities to the design of intellectual property regimes, which encourage certain forms of free riding).

²⁶⁹ See, e.g., Merges & Nelson, *supra* note 156, at 890-92.

However, given the different character of intangible goods, the requirement of good faith is less pressing in the context of intellectual property.

First, as discussed above, it is much harder for infringers to ascertain the boundaries of intellectual property rights and find the appropriate right-holder with whom to negotiate permission. Also, requiring that intellectual property improvers not make purposeful use of patented inventions and copyrighted works “would . . . be inefficient, putting improvers to a significant duplication of effort for no appreciable societal gain.”²⁷⁰ Moreover, unlike tangible property’s improvement doctrines, which often result in the original owner’s physical dispossession of the resource, the original owner of a patent or copyright will not suffer an analogous physical dispossession. At most, a copyright or patent owner will suffer some loss of expectation value but can nonetheless continue to make some productive use of the protected work or invention.²⁷¹

Finally, the assessment of good faith is likely to be particularly onerous in the intellectual property context—even one pegged to a reasonableness standard. For example, good faith could mean that the defendant had a good reason not to know of the existence of a patent or copyright, or had a good reason for not locating the right-holder, or had a good reason to think that the scope of the patent or copyright did not encompass her improving use, or had good reason to think the patent or copyright was invalid.

D. *Role of “Significant” Improvement*

In many of the traditional property improvement doctrines, the value added by the second-comer must be substantial or significant to trigger application of the doctrine. That the second-comer’s efforts resulted in the minimal additional value to the resource is usually not sufficient. The existence of this requirement in the traditional property context seems to respond both to opportunism concerns and administrability concerns.²⁷²

In the intellectual property context, cabinining the availability of improvement doctrines to cases of “significant,” “substantial,” or “radical” improvements can carry similar benefits. This may be particularly true given the greater difficulties associated with identifying and valuing improvements in intellectual property than in the tangible property context. A significance requirement could help manage courts’ definitional anxiety in labeling a second-comer’s unauthorized use of a patented invention or copyrighted work as an “improvement” that merits departure from the tradi-

²⁷⁰ Lemley, *supra* note 39, at 1040.

²⁷¹ See Lee, *supra* note 8, at 239-40.

²⁷² See *supra* text accompanying notes 137-140.

tional rule of exclusion.²⁷³ In close cases, or where the value of the second-comer's contribution is ambiguous, application of an improvement doctrine to excuse liability or alter the remedy would not be warranted.²⁷⁴

IV. STRENGTHENING POST-GRANT CONSIDERATIONS OF IMPROVEMENT IN IP

Traditional property law's improvement doctrines offer three central features. First, they focus directly on the question of the second-comer's improvement—the value increase generated by the unauthorized alteration to the resource—rather than the subjective expectations of a right-holder with respect to her property. Second, the process of determining improvement is generally a transparent one (though not always uncontroversial among the parties). Third, the determination of improvement, either alone or depending on the context, in conjunction with other factors, like good faith and “significant” improvement, triggers a finding of no liability or remedial flexibility.

Thus, it is fair to say that despite property law's varied normative commitments, traditional property doctrine backs up a commitment to progress by rewarding *ex post* (or rather, not deterring) certain unauthorized improvers who make value-increasing alterations to land or chattels. As demonstrated in the previous Part, it is not clear that intellectual property doctrines do the same, which is surprising given intellectual property law's more singular focus on promoting the “Progress of Science and useful Arts” and the necessarily cumulative nature of creation.

Traditional property law's specific definition of improvement—or any single definition of improvement—is unlikely to be workable or satisfactory across the breadth of intellectual property subject matter. Nonetheless, what is instructive about traditional property's improvement doctrines is the directness and transparency of inquiry regarding the value of the improver's contribution and the attendant remedial flexibility. Thus, the Sections that follow consider some areas where patent and copyright law could more directly and transparently consider certain kinds of unauthorized improvement and the benefits of a more improvement-focused approach to liability and remedy determinations.

²⁷³ Cf. Lemley, *supra* note 39, at 1065 (“Some improvements are clearly minor in relation to the underlying invention; others are clearly radical. In between, there may be a significant degree of uncertainty as to which invention is actually more valuable.”).

²⁷⁴ See Lee, *supra* note 8, at 205 (noting that a “high[er] standard would screen out a significant proportion of economically trivial improvements for which the cost and uncertainty of liability-rule protection may not be justified”).

A. *Patent Law*

Patent law has a normative and rhetorical commitment to fostering cumulative technological improvements. However, as demonstrated in the previous Part, there are virtually no patent law improvement doctrines to speak of.²⁷⁵ Historically, patent law has not explicitly or routinely considered unauthorized improvement of any kind, technological or commercial, as a basis for excusing liability or triggering remedial flexibility. The rarely utilized reverse doctrine of equivalents perhaps comes the closest in theory, but it falls far short in practice. And more recently, the Supreme Court's *eBay v. MercExchange* decision and its progeny seem to cautiously endorse direct consideration of certain kinds of unauthorized improvement at the remedial stage.²⁷⁶ While these are tentative steps in the right direction, there is room for improvement in patent law's post-grant consideration of unauthorized improvement. The Subsections that follow sketch areas where patent law's consideration of cumulative improvement could be strengthened at the post-grant stage.

1. Reorienting the Reverse Doctrine of Equivalents to Protect Radical Technological Improvement

The previous Part noted the limitations of an RDOE inquiry that focuses exclusively on substantial difference in the operating principle of the invention—an analysis that seems largely guided by the claim language.²⁷⁷ This Subsection suggests that the doctrine should, where possible, assess “radical” improvement directly as an alternative to the fundamental-difference-in-operating-principle test. This suggested refocusing of the RDOE is reminiscent of the shift from a “transformation”-oriented approach to a “comparative value” approach in the doctrine of accession. As reflected by the Michigan Supreme Court's *Wetherbee* decision, the comparative value approach emerged when the question—*is the improved chattel sufficiently transformed from the original?*—became too hard or unhelpful to apply in certain contexts.²⁷⁸ Rather than struggle within the definitional confines of transformation, courts shifted focus to the more important question: the value contributed by the second-comer.

Patent law's RDOE confronts a similar hurdle. A direct, comparative valuation approach is likely to be harder in the patent context than the chattel context, for all the reasons previously discussed. Courts can, however, make this direct assessment of radical improvement by considering evi-

²⁷⁵ See *supra* Part III.A.1.

²⁷⁶ See *supra* Part III.A.1.d.

²⁷⁷ See *supra* Part III.A.1.c.

²⁷⁸ See *Wetherbee v. Green*, 22 Mich. 311, 318-20 (1871).

dence like the commercial success of the improvement and its measurable impact on a particular industry. Take an example from early American radio technology: *Marconi Wireless Telegraph Co. of America v. De Forest Radio Telephone & Telegraph Co.*²⁷⁹ Lee De Forest patented an oscillating triode, which amplified radio waves. His invention was a critical development in early radio technology, described as “the heart and soul of radio.”²⁸⁰ And it was a marked improvement on an earlier oscillating radio diode, patented by Marconi Wireless. When AT&T obtained De Forest’s patent and tried to commercialize the triode technology, Marconi sued. The district court held that the triode infringed Marconi’s diode patent and granted an injunction. While the RDOE was not raised in this case, this is an example of a situation where direct analysis of the improver’s contribution might have led a court to conclude that excuse from infringement liability was warranted.

More recently, courts have addressed cases involving technical advances in biotechnology. In these cases, subsequent inventors figured out radically improved ways to produce purified natural products using recombinant DNA technology, which carries significant commercial benefits for patients. For example, in *Scripps Clinic & Research Foundation v. Genentech, Inc.*,²⁸¹ Scripps had a patent for human Factor VIII:C, a blood-clotting product, which Scripps purified and isolated from human blood. The product was useful in the treatment of hemophiliacs, but “[t]he process was expensive and, because of the large volume of whole blood needed as starting materials, [and] the possibility of contamination and disease from impurities in the source of blood, . . . there ha[d] been a continuing search for improvement.”²⁸² Using recombinant DNA technology (i.e., a different process), Genentech produced an identical blood-clotting product. Among the latter’s advantages over the earlier patented technique was that it accelerated the production of human Factor VIII:C—making more of it available for patients and at lesser cost. Genentech’s product literally infringed Scripps’s product claims for the clotting agent. Genentech had raised an RDOE defense, but the district court rejected the argument and granted summary judgment to Scripps on the issue of infringement. The Federal Circuit subsequently reversed, holding that material issues of fact precluded summary judgment.²⁸³

The Scripps patent was ultimately invalidated for failing to satisfy section 112’s disclosure requirements. However, this case nonetheless highlights a situation where a more direct assessment of the fact and signifi-

²⁷⁹ 243 F. 560 (2d Cir. 1917).

²⁸⁰ Merges & Nelson, *supra* note 156, at 892 (internal quotation marks omitted).

²⁸¹ 927 F.2d 1565 (Fed. Cir. 1991), *overruled on other grounds by* Abbott Labs. v. Sandoz, Inc., 566 F.3d 1282 (Fed. Cir. 2009).

²⁸² *Id.* at 1568-69.

²⁸³ *Id.* at 1581.

cance of improvement is possible and preferable to an RDOE analysis that focuses narrowly on whether the accused product is “so far changed in principle from a patented article that it performs the same or a similar function in a substantially different way.” In this example, Genentech’s product performed the same function in the same way as Scripps’s product; the method of creation, however, allowed for enormous commercial benefits. This is a radical improvement that would not be captured by existing RDOE analysis.²⁸⁴

Given the all-or-nothing nature of the RDOE—i.e., a successful defendant is excused from liability despite literal infringement—it should be reserved for radical improvements. That is, the nature of the improvement must be such that it has a dramatic impact on the relevant industry—as was the case in the examples described above. This distinction will no doubt be easier to draw in some cases than others. In cases where the line-drawing task is more difficult, courts may be loath to impose such an all-or-nothing solution. For the category of improvements that are significant, but may fall short of the radical designation, the post-*eBay* remedial framework may offer more potential.

2. Strengthening Consideration of Improvements Within the Post-*eBay* Remedial Framework

In the patent remedies context, there are at least three promising areas for strengthened consideration of improvement. First, Justice Kennedy’s concurrence in the *eBay* decision suggests potential remedial flexibility for one category of improvement—where the patented invention is but a small component of an integrated product. Some district courts have relied on this language in concluding that the plaintiff failed to satisfy the irreparable harm and inadequacy of monetary remedies prongs of the equitable test. For example, in *z4 Technologies, Inc. v. Microsoft Corp.*,²⁸⁵ the court denied permanent injunctive relief to the owner of patented software activation technology against the manufacturer of infringing software products that contained the patented technology, explaining:

²⁸⁴ A somewhat similar situation was presented in *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200 (Fed. Cir. 1991). Genetics Institute (“GI”) patented an isolated and purified protein that stimulates red blood cell production, erythropoietin (“EPO”), beneficial in treating anemia and other blood disorders. Amgen began producing EPO through recombinant DNA technology, which enabled accelerated production of EPO. Amgen and GI sued each other for patent infringement. In denying Amgen’s preliminary injunction motion, the district court emphasized the public interest and the fact that “recombinant EPO is an extraordinarily valuable medicine that promises marked relief from renal failure.” *Id.* at 1205 (internal quotation marks omitted). GI’s claims were ultimately invalidated by the Federal Circuit on enablement grounds. *Id.*

²⁸⁵ 434 F. Supp. 2d 437 (E.D. Tex. 2006).

In his concurrence, Justice Kennedy instructed courts to be cognizant of the nature of the patent being enforced . . . Here, product activation is a very small component of the Microsoft Windows and Office software products that the jury found to infringe z4's patents. The infringing product activation component of the software is in no way related to the core functionality for which the software is purchased by consumers. Accordingly, Justice Kennedy's comments support the conclusion that monetary damages would be sufficient to compensate z4 for any future infringement by Microsoft.²⁸⁶

More recently, Peter Lee has suggested a remedies approach that would strengthen judicial consideration of another type of unauthorized improvement: where the infringing product is an improved species falling within the literal terms of a broad genus patent. He suggests that courts should deny injunctive relief under the *eBay* framework where an infringing product substantially improves on a patented invention.²⁸⁷ Identification of such "substantial" improvements would encompass both technical and economic considerations, which "may require courts to engage patented inventions more substantively . . . rather than simply focusing on the literal text of patent claims."²⁸⁸

Finally, post-*eBay* commentary urging differing remedial treatment of nonpracticing patent assertion entities (e.g., patent trolls) that seek to enforce patents against practicing entities offers a third vision of "improvement." Some district courts have latched onto language in Justice Kennedy's concurrence to deny injunctive relief to certain nonpracticing entities.²⁸⁹ This is not a consideration of technological improvement, but rather commercial improvement. Namely, the infringing defendant is practicing the patent and commercializing a product, while the plaintiff is not. A number of commentators have advocated the application of liability rules in this context.²⁹⁰

B. *Copyright Law*

Congress's authority to enact copyright law stems from the same Constitutional clause as that of patent law, and both share the focus of "promoting progress" in the relative contexts of inventions and expressive works. Despite references to artistic or literary progress in copyright case law,²⁹¹

²⁸⁶ *Id.* at 441.

²⁸⁷ Lee, *supra* note 8, at 178.

²⁸⁸ *Id.* at 231-32 & n.357.

²⁸⁹ See generally Golden, *supra* note 196.

²⁹⁰ See Lemley & Weiser, *supra* note 24, at 799-800 ("[C]ourts should cast a skeptical eye at claims for injunctive relief where the patent owner is not a direct competitor of the defendant . . .").

²⁹¹ See, e.g., *Universal City Studios, Inc. v. Reimerdes*, 82 F. Supp. 2d 211, 222 (S.D.N.Y. 2000) (referring to copyright law's impact on "artistic progress"); see also *Becker v. Loew's, Inc.*, 133 F.2d 889, 891 (7th Cir. 1943) (referring to "literary progress").

copyright law has no well-articulated conception of cumulative “improvement” akin to patent.

1. Considering “Substantial Improvement” in Addition to “Transformative Use”

Under the doctrine of fair use, courts should assess the alleged infringer’s contribution of value in a more direct and transparent fashion. Two obstacles seem to stand in the way of a more “improvement”-focused fair use inquiry. The first is the historic “tendency of courts to focus primarily on market harm to the copyright owner”²⁹²—an emphasis on factor four, particularly where the use at issue does not fall into a recognized category of transformative use like parody. The second limitation is the current state of the transformative use doctrine itself, in which courts consider “improvement” indirectly and through the somewhat unsatisfactory lens of “transformation.”

The addition of an explicit “substantial improvement” inquiry to the factor one analysis could address these limitations. This substantial improvement inquiry would consist of two parts: (1) a quantitative component that assesses the amount of copyright-protected expression used compared to the *accused* work as a whole; and (2) a qualitative component that assesses the social value generated by the defendant’s use of the copyrighted work. Provided a work is deemed a “substantial improvement” under this analysis, the impact of the remaining factors—particularly factor four’s market harm analysis—should recede in importance. Thus “courts must be willing to permit a use in circumstances where it adds a great deal of value relative to what has been copied, even if the result is to harm the market for the original copyrighted work.”²⁹³

As to the quantitative assessment, the third fair use factor currently requires courts to assess “the amount and substantiality of the portion [of the copyrighted work] used in relation to the *copyrighted* work as a whole.”²⁹⁴ No prong of the fair use test requires courts to consider the percentage of the allegedly infringing work that comprises the copyrighted work.²⁹⁵ A few courts have nonetheless considered this as part of the factor three inquiry.²⁹⁶ Others have considered it as part of factor one’s transformative use analysis. For example, in *Bill Graham Archives (BGA) v. Dorling Kindersley*

²⁹² Lemley, *supra* note 39, at 1077.

²⁹³ *Id.* at 1078.

²⁹⁴ 17 U.S.C. § 107(3) (2012) (emphasis added).

²⁹⁵ *Bill Graham Archives v. Dorling Kindersley Ltd.*, 448 F.3d 605, 611 (2d Cir. 2006).

²⁹⁶ *See Harper & Row Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 565-66 (1985) (finding no fair use where quotes from President Ford’s unpublished memoirs constituted at least 13 percent of the allegedly infringing magazine article).

Ltd. (DK),²⁹⁷ DK used smaller replicas of seven copyrighted concert poster images in its coffee table history book of the Grateful Dead. Despite the fact that the entire posters were replicated in the book, the Second Circuit found transformative use. The court based this finding in part on the fact that “BGA’s [copyrighted] images constitute[d] an inconsequential portion of” the allegedly infringing book: “[T]he book is 480 pages long, while BGA images . . . account for less than one-fifth of one percent of the book.”²⁹⁸

In other cases, however, the fact that a replicated image comprises only a very small part of a defendant’s work has not entered courts’ infringement calculus.²⁹⁹ Thus, courts are inconsistent in this regard. Where the copyrighted work—even in its entirety—comprises a very small part of the defendant’s work, this is suggestive that the defendant’s contribution of value dominates the allegedly infringing work. However, as this quantitative assessment is not a sufficient proxy for assessing defendant’s contribution relative to the copyrighted work taken, a qualitative assessment is also necessary.³⁰⁰

As to the qualitative assessment of improvement, there is likely to be more disagreement regarding the extent of value contribution in the copyright context than in the patent or tangible property contexts, given the nature and breadth of copyrightable subject matter. The subject matter of copyright law includes not only expressive works like novels, artwork, and musical compositions but also more technical works like computer software. In the context of software, a more technological conception of qualitative improvement is appropriate—e.g., fewer bugs, greater interoperability.³⁰¹ In some cases, courts have already found allegedly infringing software and video games to be fair uses on grounds that they interoperate with a copyrighted work.³⁰² In other contexts, a different conception of value

²⁹⁷ *Bill Graham Archives*, 448 F.3d at 607.

²⁹⁸ *Id.* at 611.

²⁹⁹ See *Woods v. Universal City Studios, Inc.*, 920 F. Supp. 62, 65 (S.D.N.Y. 1996) (enjoining distribution of the film *12 Monkeys* because a copyrighted image of a chair mounted on a wall was depicted for “less than five minutes of a movie 130 minutes long”).

³⁰⁰ See *Addison-Wesley Publ’g Co. v. Brown*, 223 F. Supp. 219, 223-24 (E.D.N.Y. 1963). The defendant published a manual of solutions to problems in copyrighted college physics textbooks but cleverly refrained from retyping the actual problems into the manual. Instead, defendant’s manual referenced the chapter and problem numbers in plaintiffs’ books. Thus, no literal text from plaintiffs’ books appeared in the defendant’s manual. Yet the court focused on the relative valuelessness of the solutions book without the plaintiffs’ textbook: “The solutions, for their part, have no independent viability. . . . What gives the solutions their value is that which . . . is already in the pirated works.” *Id.*

³⁰¹ Lemley, *supra* note 39, at 1077 n.395.

³⁰² See, e.g., *Sony Computer Entm’t v. Connectix Corp.*, 203 F.3d 596, 599 (9th Cir. 2000) (holding as fair use Connectix’s copying of Sony’s BIOS software program in order to create emulator software that enabled Sony PlayStation games to be played on computers). In its fair use analysis, the Ninth Circuit downplayed the fact that Sony might lose console sales and profits, focusing on the fact that Connectix’s transformative “innovation affords opportunities for game play in new environments,

contribution (e.g., educational or informational value) may be appropriate.³⁰³

Ultimately, fair use doctrine will benefit in various ways from a more direct and transparent consideration of “improvement” that requires courts to assess and articulate the specific type of value added by the infringer. For example, courts currently profess value neutrality when it comes to assessing the relative merits of an infringing work that borrows from copyrighted work. But despite paying lip service to *Bleistein*’s aesthetic nondiscrimination principle, courts do in fact make aesthetic or other kinds of substantive judgments about the relative merits of an infringing work in the context of fair use. Because this evaluation of “improvement” is indirect and opaque, rather than direct and transparent, judges do not get the benefit of expert testimony or some other regularized form of evaluation, and parties are unfairly prevented from addressing the judge’s actual basis for evaluation.³⁰⁴

Also, this proposal may lessen courts’ knee-jerk reliance on formal distinctions like parody and satire, in favor of a more searching and direct assessment of the value added by a defendant asserting fair use. The reliance on formal distinctions rather than a more transparent assessment of improvement can lead courts to ignore certain value-increasing uses like satire and to mislabel certain high-value uses as “parody” even when they are not appropriately described as such.³⁰⁵

Despite the many legitimate criticisms of the current state of fair use doctrine and various calls to marginalize it,³⁰⁶ this Article suggests these modest reforms to fair use for the fairly simple reason that fair use is not going anywhere. Thus, unlike more dramatic departures from the current

specifically anywhere a Sony PlayStation console and television are not available.” *Id.* at 606; *see also* *Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc.*, 964 F.2d 965, 971 (9th Cir. 1992).

³⁰³ For example, a district court recently deemed Google’s scanning of 20 million books into a search index a fair use, due largely to its educational and information value. *See* *Authors Guild, Inc. v. Google Inc.*, 954 F. Supp. 2d 282, 293 (S.D.N.Y. 2013) (noting Google Books’ “significant public benefits” as a “research tool” for “students, teachers, librarians, and [scholars],” as well as its ability to “preserve[] books, in particular out-of-print and old books that have been forgotten” and to “facilitate[] access to books for print-disabled and remote or underserved populations”).

³⁰⁴ For example, Christine Haight Farley has pointed to the Second Circuit’s decision in *Rogers v. Koons*, 960 F.2d 301 (2d Cir. 1992), as a problematic example of courts’ unwillingness to consider aesthetic value explicitly, instead masking subjective preferences and value judgments behind formalities like the parody/satire distinction. In *Rogers*, Jeff Koons based his sculpture “String of Puppies” on a copyrighted photograph, “Puppies.” *Id.* at 305-06. The photographer sued for copyright infringement, and the court agreed. *See id.* at 309. Farley suggests that Koons lost his fair use defense because the court did not accept Koons’s recontextualizing of the copyrighted work as providing social value—for example, they didn’t think it was really art. “Rather than exploring the value of the speech rendered by the appropriation, the court cut short any consideration of appropriation art by pronouncing that only parodists could overcome commercial intent.” Farley, *supra* note 253, at 855.

³⁰⁵ *See supra* text accompanying notes 247-251.

³⁰⁶ *See, e.g.*, Balganes, *supra* note 254; Parchomovsky & Stein, *supra* note 214.

framework, these recalibrations of fair use “have the virtue of being thinkable . . . departures from the current system.”³⁰⁷ While the suggestions above will not necessarily ensure that fair use determinations as a whole are significantly more consistent or predictable, they can help make fair use determinations more cognizant and solicitous of substantial improvements, courts less reliant on formal distinctions as proxies for direct assessment of the value added by the infringer, and considerations of value more transparent to the parties involved.

2. Copyright Remedies

Like the reverse doctrine of equivalents, the fair use defense is all-or-nothing in nature.³⁰⁸ That is, if courts apply it, the copyright owner gets no remedy at all. Courts may be wary of such an outcome, especially where the defendant’s use, even a substantially improving use, has a significant impact on the market for the plaintiff’s copyrighted work. And if a court decides fair use does not apply, then a copyright owner will often get an injunction and damages.³⁰⁹ “Rejecting a claim of fair use thus gives the copyright owner both the right to compensation for the defendant’s use and the right to prevent or control the circumstances of that use,” through injunctive relief.³¹⁰

In patent law, some notable shifts in the remedial landscape have taken place post-*eBay*, as discussed above. While injunctive relief is still largely the norm in patent infringement cases, certain categories of “improvement” cases (e.g., nonpracticing entity plaintiffs, small patented component of defendant’s integrated product) increasingly offer less assurance to plaintiffs that injunctive relief will accompany a finding of infringement. The impact of *eBay* on the development of copyright remedy determinations, however, is less clear.³¹¹

³⁰⁷ Tushnet, *supra* note 245, at 590.

³⁰⁸ See Alex Kozinski & Christopher Newman, *What’s So Fair About Fair Use?*, 46 J. COPYRIGHT SOC’Y U.S.A. 513, 525-27 (1999) (arguing that fair use should be rejected, along with injunctive relief, and copyright owners should only be entitled to actual damages); see also Orit Fischman Afori, *Flexible Remedies as a Means to Counteract Failures in Copyright Law*, 29 CARDOZO ARTS & ENT. L.J. 1, 3 (2011) (arguing that courts should change their “all-or-nothing” approach to copyright remedies and make the range of remedies more flexible).

³⁰⁹ See 17 U.S.C. §§ 502, 504 (2012) (providing for injunctive relief, as well as damages equal to “the copyright owner’s actual damages and any additional profits of the infringer” or “statutory damages”).

³¹⁰ Lemley & Weiser, *supra* note 24, at 791.

³¹¹ See, e.g., Jiarui Liu, *Copyright Injunctions After eBay: An Empirical Study*, 16 LEWIS & CLARK L. REV. 215, 218 (2012) (“An empirical study of all post-*eBay* copyright injunction decisions up to June 1, 2010 indicates that the majority of post-*eBay* decisions on copyright injunction still totally ignored the *eBay* decision as well as the four-factor test advocated therein.” (footnote omitted)). *But see* Salinger v.

Interestingly, prior to *eBay*, the Supreme Court's noteworthy decision in *New York Times Co. v. Tasini*³¹² suggested the potential flexibility of copyright remedies. In *Tasini*, freelance writers who had written articles for the *New York Times* sued when they discovered that the newspaper was republishing their articles in electronic databases, like Lexis/Nexis, without permission. The Court held that the defendants had infringed because the right to publish the articles in the newspaper did not automatically include the right to republish them in electronic databases. Although the Court found infringement, the opinion was nonetheless sympathetic to the defendants' arguments that the electronic databases provided a valuable service by providing easy access to newspaper texts going back several decades.³¹³

Notably, the Court stated: "[I]t hardly follows from today's decision that an injunction against the inclusion of these Articles in the databases (much less all freelance articles in any databases) must issue."³¹⁴ Instead, "[t]he parties . . . may enter into an agreement allowing continued electronic reproduction of the Authors' works; they, and if necessary the courts and Congress, may draw on numerous models for distributing copyrighted works and remunerating authors for their distribution."³¹⁵ Thus, the Supreme Court encouraged the trial court to alter the traditional remedy of injunctive relief and fashion a solution—like instructing parties to arrive at an ongoing royalty agreement—that would allow the public to benefit from a more complete electronic database.³¹⁶ In this way, *Tasini* offers an alternate (and underutilized) remedial vision in cases where the defendant's unauthorized use nonetheless creates substantial value (e.g., educational or informational value) by some appreciable measure.

CONCLUSION

Courts and commentators typically invoke traditional property law analogies to support strong exclusive rights for intellectual property owners.

Colting, 607 F.3d 68, 77 (2d Cir. 2010) ("We hold today that *eBay* applies with equal force (a) to preliminary injunctions (b) that are issued for alleged copyright infringement.").

³¹² 533 U.S. 483 (2001).

³¹³ *Id.* at 504-05.

³¹⁴ *Id.* at 505; *see also* *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 578 n.10 (1994) (noting in dicta "that the goals of copyright law . . . are not always best served by automatically granting injunctive relief").

³¹⁵ *Tasini*, 533 U.S. at 505.

³¹⁶ *See* Anupam Chander, *The New York Times and Napster: How the Supreme Court's Ruling in Favor of Freelance Writers Could Keep Online Music Sharing Alive*, FINDLAW (July 30, 2001), http://writ.news.findlaw.com/commentary/20010730_chander.html ("[T]he majority was responding the concern that there would be 'holes in history' created by the removal of the freelancers' important work from electronic databases."); *see also* Sterk, *supra* note 113, at 1330 (suggesting search cost concerns motivated the remedy portion of the majority's opinion).

But traditional property law imposes a number of limits on owners' rights to exclude. This Article illuminates one particular set of limits—those doctrines in traditional property law that counsel departure from strict exclusive rights for owners in the face of unauthorized improvement. In so doing, this Article identifies the equity and efficiency concerns motivating these improvement doctrines in the traditional property context.

Surprisingly, few comparable improvement doctrines exist in intellectual property law, despite the latter's normative commitment to facilitating progress and providing sufficient incentives for subsequent innovators as well as originators. Patent law's reverse doctrine of equivalents and copyright law's "transformative use" doctrine may offer incidental relief for unauthorized improvers. But unlike traditional property's improvement doctrines, these intellectual property doctrines do not focus expressly on the fact or significance of the second-comer's improvement. The relative absence of improvement doctrines in intellectual property is disconcerting given that the equity and efficiency concerns motivating traditional property law's improvement doctrines are magnified in the context of intellectual property. This is due to the fuzzier nature of intellectual property boundaries and the greater third-party consequences at stake when intellectual property improvements are deterred.

Using traditional property's improvement doctrines and motivating concerns as a guide, this Article suggests certain modest reforms to patent and copyright law to make consideration of unauthorized improvement more explicit and routine at the liability and remedies stages. Given the difficulties of valuation, this is admittedly a less straightforward task in intellectual property than tangible property—and harder in copyright law than in patent law, which has a more developed concept of "improvement." But strengthening post-grant consideration of unauthorized improvement in intellectual property law carries significant benefits. Thus, despite the many differences between tangible property and intellectual property, the treatment of unauthorized improvement is one area where analogies to traditional property law are fruitful and can highlight the ways in which intellectual property law needs improvement.