

---

# 1. Intellectual property as property

*Molly Shaffer Van Houweling\**

---

## Contents

- I. Introduction
  - II. ‘Property’ and IP
  - III. Distinguishing Tangible and Intellectual Resources as Objects of Property
    - A. Rivalry
    - B. Excludability
    - C. Costs
  - IV. Three Cross-Cutting Themes
    - A. Property and Possession
      - 1. Possession, property origins, and the public domain
      - 2. The challenges of non-possessory property
    - B. Property and Information
    - C. Property and Time
  - V. Conclusion
- References

## I. INTRODUCTION

First-year law students learn early on that lawyers think of property not ‘as a relationship between a person (the owner) and a thing (that is owned)’ but rather as ‘relationships among people with respect to things’ (Dukeminier et al., 2014, p. 51, n. 33). This corrective appears perhaps to reorient legal thinking away from a layperson’s preoccupation with *things* and toward a more sophisticated focus on *people* and their legal relations (see Grey, 1980, for an extreme example of this view). But, in fact, what makes property law distinctive—in both its lay and expert formulations—is that the human relationships it governs (unlike the human relationships governed by the law of torts or contracts) are always mediated by things (see Smith, 2012). That these things carry legal implications with them

---

\* Harold C. Hohbach Distinguished Professor of Patent Law and Intellectual Property; Associate Dean, J.D. Curriculum and Teaching, University of California, Berkeley. Thanks to James Hicks for excellent research assistance. This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) license, with attribution to Molly Shaffer Van Houweling as the author and to the original publication venue: Peter S. Menell and Ben Depoorter, eds. 2019. *Research Handbook on the Economics of Intellectual Property Law*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing. The terms of the CC BY-NC 4.0 license are available at <https://creativecommons.org/licenses/by-nc/4.0/> (last accessed March 19, 2019).

yields the notion that property is *in rem*, not *in personam*. That these legal implications can affect anyone who encounters the thing means that they are good against the world. The things to which property rights attach are the locus of their owners' rights to exclude.

The alert law student will also note that the specific nature of a thing governed by property law can have consequences for the design of that law. The rules of acquisition by capture might sensibly differ depending on whether the thing at issue is a fox or a whale. The strength of the right to exclude might differ depending on whether the thing from which outsiders are excluded is a home or a shopping mall. The differences can be even more dramatic when the 'thing' at issue is not a tangible object at all, but rather an intangible work of authorship or invention.

This chapter will explore how important aspects of property jurisprudence apply to the fields of law that have come to be known as 'intellectual property' or 'IP'—focusing primarily on copyright and patent law.<sup>1</sup> I aim to illustrate both the relevance of enduring property themes to these areas of law and the ways in which the nature of the intangible things governed by IP should force us to resist easy analogies to tangible property. I start by tackling the contentious question of whether IP should be considered property at all, in light of key differences between tangible resources and intellectual works. Finding the property frame a useful one despite these differences, I proceed by exploring three themes that have been important to the legal and economic analysis of tangible property, and that can usefully be brought to bear on IP: the role of possession in establishing and signaling property rights; the problem of information costs related to property rights; and, finally, the relationship between property rights and time. In each of these cases, careful attention to concepts that inform the design of sensible tangible property rules can help to inform scholarship and policymaking about IP rules as well.

## II. 'PROPERTY' AND IP

The US Constitution authorizes Congress to 'promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries' (U.S. Const. art. I, § 8, cl. 8). This constitutional authorization for our federal copyright and patent laws is often referred to as the 'Intellectual Property Clause' (Walterscheid, 1994).<sup>2</sup> Indeed, the term 'intellectual property' is now ubiquitous in discussions about patent, copyright, and related fields of law. But the term is controversial.<sup>3</sup>

Advocates of strong rights for authors and inventors often characterize copyrights and patents as property rights. They tend to use that characterization to argue that these rights should be stronger and more vigorously enforced (e.g. Epstein, 2010; Epstein, 2005; Mossoff, 2005; Easterbrook, 1990). Others reject the property characterization, emphasizing that

---

<sup>1</sup> This chapter builds upon and incorporates some of my earlier work at the intersection of tangible and intangible property (Van Houweling, 2002, 2007, 2008, 2010, 2011, 2012a, 2012b, 2013, 2016a, 2016b, 2017).

<sup>2</sup> On the history of the term 'intellectual property,' see Lemley (2005) and Hughes (2012).

<sup>3</sup> For discussion of commentary critiquing and embracing the idea of IP as property, see generally Liivak and Peñalver (2013).

copyrights and patents are, and should be, more limited than the rights of owners of tangible objects; and resisting the expansion of property-based arguments beyond copyright and patent to trademark and trade secret law (e.g. Lemley, 2005; Lemley, 1999; Lunney, 1999; Samuelson, 1989). Advocates and scholars in this group worry about the rhetorical force of property-based arguments, sensing that they tend to prompt facile thinking about absolute dominion (e.g. Lemley, 1997; Bessen and Meurer, 2008; Vaidhyanathan, 2001).

A third group embraces the property paradigm but emphasizes that property rights are always contingent, contextual, and shaped by policy concerns about market failure and distributive justice. A nuanced view of property, according to these scholars, can enhance rather than distort conversations about rights in intangible things (e.g. Carrier, 2004; Chander, 2003; Cohen, 2014; Ghosh, 2007; Liivak and Peñalver, 2013; Menell, 2007b, 2011; Merges, 2011; Oliar and Stern, 2019).

Scholars of tangible property have entered this conversation as well. They tend, like the third group of IP scholars, to offer a view of property that does not get carried away with notions of absolute dominion. Interestingly, some of them look to IP as a model from which tangible property law can borrow mechanisms for limiting property rights in tangible things (e.g. Dagan, 2012; Depoorter, 2011; Singer, 2014a; Singer, 2014b).

My own view, from the perspective of a scholar working at the intersection of tangible and intangible property, is that the law of tangible property can be an important source of insights about both the benefits and costs of granting people rights to control the use of valuable resources, and about the various ways those rights and corresponding remedies can be structured (see Van Houweling 2002, 2007, 2008, 2010, 2011, 2012a, 2012b, 2013, 2016a, 2016b, 2017).

This chapter highlights some of the many insights from tangible property law and doctrine that can helpfully be applied in the field that has come to be known as intellectual property. This application should of course be done with care. To properly apply lessons from tangible property law to IP requires assiduous attention to the special characteristics of the things—intangible creations and inventions—to which this body of property law applies, and to the specific environments in which IP rights are exercised.

### III. DISTINGUISHING TANGIBLE AND INTELLECTUAL RESOURCES AS OBJECTS OF PROPERTY

The most widely accepted rationale for property rights is that they promote efficient use of, and investment in, resources by internalizing the costs and benefits of that use and investment (Demsetz, 1967). This is a corollary of the tragedy of the commons, the notion that in the absence of property rights everyone with access to a resource will use it without regard to the full costs of that use while failing to make investments that would benefit other users (Hardin, 1968). This logic is most compelling when applied to resources that are scarce (thus making overuse problematic), that are difficult to produce and/or maintain (thus making underinvestment likely), and for which self-help cannot easily be deployed to avoid overuse and undercultivation (thus justifying the costs of establishing and enforcing property rights). On each of these dimensions, there are relevant differences between tangible resources and intellectual creations that should be kept firmly in mind when using a tangible property frame to guide understanding of IP.

## **A. Rivalry**

Start with scarcity and the specter of overuse. Tangible resources are generally rivalrous: if fully consumed by one person, they cannot be consumed by another. Their stocks are therefore subject to depletion if consumption is left unchecked. Intellectual resources, by contrast, tend to be nonrivalrous (see, e.g., Boyle, 2003). That is, their consumption by one person does not interfere with their consumption by others; it does not contribute to scarcity. This distinction leads many commentators to argue that IP rights are on shakier normative ground than tangible property rights, because they cannot be justified by the overuse aspect of the tragedy of the commons (e.g. Breyer, 1970; Carrier, 2004; Ghosh, 2007; Lemley, 2005; Menell, 2007a, 2011; Rose, 2003; Sterk, 1996) and because, as Henry Smith observes, ‘excluding others from information when they could use it at zero marginal cost seems wasteful’ (Smith, 2009b, p. 2084).

This distinction and its normative implications should not be overstated, however (as noted by Nachbar, 2007). On the one hand, some intellectual resources can become less valuable when overused. Trademarks cannot achieve their function of reducing consumer confusion if they are used indiscriminately on different products from different producers. So too, the value of a celebrity endorsement could be undermined by indiscriminate association with many goods. These are intangible objects of IP protection the value of which could be diminished by overuse (see Landes and Posner 2003, pp. 485–7). Looking to the other side of the comparison, tangible resources are not always rivalrous as a practical matter. They can often be enjoyed simultaneously by multiple users who neither interfere with each other nor diminish the availability of the resource for future users (see Rose, 1986).

Across resource types, nonrivalry undermines the logic of the tragedy of overuse. In the tangible realm as well as the intellectual realm, commons can produce comedy (to use Carol Rose’s (1986) term) instead of tragedy. As I will explain below, this helps to explain doctrinal rules that promote the growth of the unowned public domain.

## **B. Excludability**

Property rights are often lauded as promoting investment in resources: they help investors secure rewards on their investments by excluding others from the benefits of those investments. It is often especially difficult for investors in intangible works to exclude other people. This characteristic is referred to as non-excludability, and is often offered as an especially powerful justification for IP.

Note, however, that the starkness of the term non-excludability can be misleading (as noted by Parchomovsky and Siegelman, 2002). It is not as difficult to exclude people from enjoying the benefits of a work of creativity or invention as it is to exclude people from enjoying the benefits of a lighthouse, the classic nonexcludable public good. The author of a book could keep the book in her reading room, for example, to be read only by the people to whom she grants permission to enter.<sup>4</sup> This rather ungainly type of

---

<sup>4</sup> It was common during the Middle Ages for monasteries to charge fees for permission to copy manuscripts in their collections. Once a manuscript was copied, its owner lost control of

exclusion has its drawbacks, of course. It limits the author's ability to realize a return on her investment to the meager returns from her reading room invitees; and it limits the number of readers who can benefit from her work. The heart of the problem is not so much that intellectual works are nonexcludable. It is that exclusion is difficult to combine with wide dissemination, and therefore with extracting the full benefits of intellectual investments for both the author and the public (see generally Arrow, 1962). On the other side of the comparison, the classic lighthouse example reveals that the benefits of investing in tangible resources can also be nonexcludable. Both tangible and intellectual resources can present a public goods problem in which we worry that the market will not provide sufficient incentives to invest in a resource. In both cases, granting private property rights is a possible solution to the problem, albeit an imperfect one that entails its own costs and should be considered in light of alternatives (see generally Kapczynski, 2012).

### C. Costs

There are also several distinctions between tangible and intellectual resources that are relevant to the costs of establishing and maintaining a property system (see generally Menell, 2011). One is the relative difficulty of delineating the boundaries that are important to the healthy functioning of a legal system premised on the right to exclude. Intellectual creations are notoriously difficult to define in ways that give clear notice that can help promote transactions and avoid inadvertent trespasses (Smith, 2009b). On this front, rights that attach to intellectual resources are similar to non-possessory rights that attach to tangible resources—think of servitudes and future interests. These rights can be similarly difficult to notice and comprehend in that they do not correspond to possession of a physical parcel or tangible object but rather interfere with the rights of people in possession (Van Houweling, 2008).

The costs of property rights also include the distributive injustices perpetrated by the allocation of resources based on ability to pay (see generally, e.g., Ghosh, 2007; Van Houweling, 2005; Chander, 2003). Of course, neither property rights in tangible nor intellectual resources necessarily require or produce market-based allocation of those resources, at least as an initial matter. But free alienability is one hallmark of private property (albeit subject to important exceptions as noted by, e.g., Calabresi and Melamed (1972), Fennell (2009), and Radin (1987)). Thus property tends overwhelmingly to be distributed via the price mechanism. Here, tangible and intellectual property share the potential for tragic consequences when the market denies basic necessities to those unable to pay. But the tragedy is especially pronounced for nonrivalrous resources that could be distributed to everyone at little or no marginal cost (Kapczynski, 2012).

Both tangible and intellectual property rights affect the distribution of physical resources, some of which are embedded with intellectual content (e.g. patented tools and medicine, books). IP rights are noteworthy in their potential to affect the distribution

---

the text embodied in it (Rose, 1995). This proto-copyright was valuable, however, in an age before mechanical reproduction, when an owner could charge a premium based on the superior quality of his manuscript compared to error-ridden copies (Van Houweling, 2010).

of inventive and creative opportunities as well, insofar as IP rights can limit cumulative invention and creativity by those who do not acquire permission to build upon what has come before. Once again, the distinction can be overstated. In the tangible realm, too, distribution of resources can dramatically impact opportunities for creativity, invention, and all other aspects of self-realization.

#### IV. THREE CROSS-CUTTING THEMES

Despite their differences, tangible and intellectual resources are both managed—in part—by legal institutions that can usefully be characterized as property regimes. The characteristics that make these regimes property—*in rem* rights that are good against the world and allow their owners to exclude others from valuable resources—pose some recurring questions and challenges that cut across the resource realms in which they operate. I proceed by exploring these questions and challenges as embedded in three themes: the role of possession in establishing and signaling property rights; the problem of information costs related to property rights; and, finally, the relationship between property rights and time. These themes have long been important to the legal and economic analysis of property law. All can usefully be brought to bear on IP as well, with the distinctions above kept carefully in mind.

##### A. Property and Possession

###### 1. Possession, property origins, and the public domain

Possession operates as both a source and a signal of property rights in land and physical objects. The importance of possession has been traced back at least to Roman law and across legal traditions around the world (Fraleigh, 2011; Lueck, 1995); it has been explained as psychologically embedded (Barros, 2011; Friedman and Neary, 2009; Merrill and Smith, 2007) and even the product of evolution (Stake, 2004). Ambiguity about the meaning of possession is likely as old and widespread (Drassinower, 2006; Rose, 1985; Smith, 2003).

Theorists have cited a number of different rationales in an effort to help explain the importance and meaning of possession as applied to particular property controversies.<sup>5</sup> Some of these rationales are particularly helpful for understanding and perhaps improving the mechanisms by which authors and inventors seize ‘possession’ of the intangible subject matter of IP.

One rationale for possession as an origin of property rights is that acquiring possession typically requires labor, which is both a moral justification for property rights from a Lockean labor-desert perspective and also worth incentivizing in order to promote the productive use of resources from a utilitarian perspective. A difficulty that often arises

---

<sup>5</sup> The classic case of *Pierson v. Post*, 3 Cai. 175 (N.Y. 1805) is the most typical case study. The competing views offered by the majority, dissent, and innumerable commentators deploy arguments emphasizing labor, investment, notice, custom, and more, in an effort to explain what constitutes possession adequate to establish initial property rights in a wild fox (see, e.g., Rose, 1985; Epstein, 1979).

in the tangible property context is that multiple people can claim that they labored in a deserving and socially productive way to reduce something to possession, but the rule of first possession aims to declare only one of them the winner. As Richard Epstein notes, '[s]ome labor goes unrequited when two pursue and one loses' (1979, p. 1225). And yet, a rule that does its best to decide between two competing pursuers can be justified in the tangible property context by the benefits of individual ownership, and by the difficulty of fairly dividing the fruits of a joint pursuit. In his qualified defense of the first possession rule, Epstein contrasts the rule with what he sees as the only alternative, original common ownership coupled with a system of public control to 'decide how the rights in question are to be packaged and divided amongst individuals' (1979, p. 1239). In light of the challenges of establishing such a system and the potential for its abuse, Epstein argues that '[o]n balance the case tilts strongly for the first possession theories, whatever their infirmities' (1979, p. 1238).

How do these insights translate to IP? Here too, rules that award ownership on the basis of original acquisition would appear to reward and incentivize socially beneficial activity. But in the IP context there are special difficulties with identifying the 'things' subject to original acquisition and the acts that amount to possession. The intangible subject matter of copyright and patent protection is quite different from the parcels of land and wild animals that provide classic examples of the first possession rule in action. And yet there are clear analogs to first possession for purposes of acquiring rights in intellectual creations.<sup>6</sup>

Consider two examples: an original musical melody and a newfangled (i.e., novel and nonobvious) mousetrap. These are the types of creative and inventive works that copyright and patent law should incentivize. They required mental labor and were perhaps the result of costly failed experiments. At what point are these intangible creations 'possessed' in a way that should trigger a rule based on first possession? Arguably the mental labor that we want to reward and incentivize has already been expended by the time the author and inventor have captured the melody and mousetrap in their brains. But these are not the rules of first possession that IP law has adopted. In order to qualify for protection, the melody would have to be fixed in a tangible medium of expression (e.g. the notes written down or captured in a sound recording) (17 U.S.C. § 102). The mousetrap would have to be either actually or constructively 'reduced to practice' (e.g. *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1352 (2010)).

In some ways, these IP requirements are fully consistent with the rules and rationales of first possession that emerge from the tangible property context. These rules arguably require the type of possession that makes a resource available for a socially beneficial purpose. Merely giving chase to a fox—as laborious as that may be—does not result in ownership if the fox is still alive and hunting chickens. Similarly, a melody or mousetrap that exists merely in one individual's head does not yet benefit society. In theory, copyright and patent both withhold their rewards until the intangible work is at least capable of being communicated to and used by other people. Where in practice they do not—for example, where patents are awarded based on constructive reduction to practice that does

---

<sup>6</sup> On the connection between possession and intellectual property, see, e.g., Yen (1990); Drassinower (2006); Holbrook (2009, 2006, 2016); Oliar and Stern (2019); Smith (2007).

not in fact establish that the invention works—they are subject to critique (e.g. Lemley, 2016) that very much echoes arguments regarding the proper definition of possession of tangible property.

In patent, something else is required in addition to reduction to practice. To establish patent rights, an inventor must file a timely patent application that discloses how to practice her invention (35 U.S.C. § 112). Patent's disclosure requirements are consistent with a utilitarian rationale for first possession, under the theory that the public does not receive the full benefit of patentable inventions unless their details are adequately disclosed (*Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974)). By requiring that the inventor describe her invention in sufficient detail to establish that she has in fact captured it in her own mind, disclosure requirements also provide objective evidence that she has in fact done sufficient intellectual labor (not just abstract daydreaming) to merit reward and encouragement (Holbrook, 2006). Note, however, that not just any disclosure will do. Disclosure via a timely patent application is required. By contrast, disclosure via a printed publication, public use, or public sale does not establish patent rights. Just the opposite: these disclosures by the inventor deposit the invention into the public domain unless the inventor-discloser files a patent application within a year (35 U.S.C. § 102(a)–(b)).

Does anything within the theory of first possession justify denying property rights to an inventor who has captured his invention by reducing it to practice and delivered its benefits to the public by disclosing it? Without more, the theory of possession as labor and productive use does not seem adequate to the task. Indeed, this IP example appears to confirm Epstein's observation about the inadequacy of such theories: just as the unsuccessful chaser expended reward-worthy labor but was denied the fox, the patent-barred inventor expends reward-worthy ingenuity but is denied his IP.

Both the tangible and IP examples suggest that the type of possession that triggers property rights must involve more than productive labor, which suggests that another rationale is at work. One candidate is notice: possession can provide clear notice of an owner's claim. This idea is central to Carol Rose's persuasive explanation in *Possession as the Origin of Property*, in which she observes that:

[p]ossession as the basis of property ownership . . . seems to amount to something like yelling loudly enough to all who may be interested. The first to say, 'This is mine,' in a way that the public understands, gets the prize, and the law will help him keep it against someone else who says, 'No, it is *mine*.' (1985, p. 81)

For patentable inventions, merely disclosing an invention to the public via a public use, sale, or printed publication provides some notice—that is, notice regarding the nature of the invention and the inventor's intellectual possession of it. As Holbrook (2006) notes:

[D]emonstrating the possession of an intangible idea is difficult. One could describe an idea but not necessarily truly be in possession of it. For example, the idea of teleportation has existed in science fiction, such as in *Star Trek*, for some time. Simply having the idea of teleportation, however, does not mean that those authors are in possession of a teleportation device. Instead, the key aspect of possession is whether or not the author can actually make a functioning device. Thus, the best evidence of possession would be either the inventor physically creating the invention or, at least, providing a description that is clear enough to enable someone else to build it (2006, p. 146–7).

Unless that description comes in the form of a patent application, however, it is insufficient to establish property rights in the invention. Why must an invention hunter, unlike a fox hunter, both demonstrate that she has grasped her prey *and* submit a bunch of paperwork to establish her claim to it?<sup>7</sup> Here is an instance in which the distinct nature of the thing that is the subject matter of property has important consequences. Because of the nonrivalrous nature of an invention, the inventor's possession of it does not prevent others from encountering it 'in the wild.' Another inventor might conceive of the same mousetrap idea; or he might encounter one of many coexisting physical embodiments of the invention. In either case, he may not recognize that the invention is the subject of patent rights unless there is some indication—either on the embodiment itself or in a centralized registry—that it has been claimed. For physical objects possession alone may be enough to communicate the signal that 'this is mine!' For intangible inventions that can be possessed by many people at the same time, something else is required.

This is not to say that the functional equivalents of possession that we observe in the IP context—including both requirements that the IP owner has captured her intangible creation in a concrete way and has signaled her claim to others—are sufficient to serve possession's purposes. The failure of patents to provide adequate notice to rival inventors is a notorious shortcoming of the contemporary patent system (see, e.g., Bessen and Meurer, 2008; Fromer, 2009; Long, 2004; Menell and Meurer, 2013). As for copyrights, the requirement that claims to works of authorship be communicated to the public via a centralized registry or marked embodiments has been abandoned (see, e.g., Ginsburg, 2010; Litman, 2016; Sprigman, 2004). Now fixation of an original work of authorship is all that is required, and works are eligible for the longest possible duration with no renewal paperwork (Samuelson, 2016). Even where the existence and ownership of a copyright is clear, its boundaries are subject to the vagaries of the idea/expression dichotomy, fair use, and other aspects of copyright scope and defenses (Fromer, 2009; Liu, 2016; Long, 2004; Menell, 2016). Works of authorship are even easier to claim than foxes, but copyright claims are much more difficult to observe.

Many critics of contemporary copyright law lament this development and advocate for policy changes that would require (or at least more strongly incentivize) copyright notice and registration (e.g., Gibson, 2005; Landes and Posner, 2003; Samuelson et al., 2010; Samuelson, 2016; Sprigman, 2004). These calls are consistent with the notice-based rationales that property theorists have offered for possession as a trigger for tangible property rights; they also recognize that the unique characteristics of intangible property might require different mechanisms of notice provision.

For the sake of argument, assume that these critics are right to argue that copyright (like patent) should require some form of 'claiming' that provides notice to the public in a way roughly equivalent to physical possession of tangible objects.<sup>8</sup> What should the consequences of a failure to claim property be? In tangible property, the consequences

---

<sup>7</sup> Note that paperwork is not irrelevant in the tangible property context, as Rose (1985) notes in her discussion of possession as notice. But recording of possession-based claims to tangible property is not generally required to establish them in the first instance, as discussed in Van Houweling (2013).

<sup>8</sup> On the different claiming requirements of patent and copyright law, see generally Fromer (2009); Oliar and Stern (2019).

are typically that a rival claimant has an opportunity to become a property owner. Post failed to capture the fox, but the ‘saucy intruder’ Pierson succeeded.<sup>9</sup>

By contrast, in the copyright and patent contexts the analogs to first possession are not merely questions of who was first (or has anyone been first yet)—that is, who was first as between two ‘would-be’ owners, or when is the thing at issue still unpossessed and subject to capture and ownership by someone new? In the IP context, unlike in most tangible property contexts, it is possible for a failed or incomplete attempt at possession to make a work of authorship or invention forever unownable by anyone. Under US patent law, an invention that has been in public use for more than a year cannot thereafter be patented—by the inventor or anyone else (17 U.S.C. § 102). It has permanently entered the public domain. For the first two-plus centuries of US copyright law, a similar situation obtained: works that were published without proper notice entered the public domain and could not thereafter be captured for copyright purposes by their authors or anyone else (Samuelson, 2016; Sprigman, 2004).

Can these IP doctrines be squared with first possession theory? Indeed they can, if we are attentive to the special qualities of intangible works. Consider Epstein’s defense of first possession: it relies on the assumption that it is desirable for tangible objects ultimately to be owned by someone. If the identity of that someone were not determined based on who was the first to possess an object, then the government would have to take over and figure out some more heavy-handed way to divvy things up. Why is this divvying necessary? Because of the tragedy of the commons, so the theory goes. Things without owners are unlikely to be carefully husbanded; they are instead likely to be overused. By contrast, once an intellectual work has been created, its nonrivalrous nature means it is not subject to dissipation.<sup>10</sup> It therefore makes perfect sense that in the IP context the result of a failure adequately to possess something (and clearly signal that possession in a way that communicates an ownership claim) does not necessarily make that thing subject to ownership by one’s rivals, but might instead deliver it to the public domain. This explanation also helps to make sense of some of those tangible property contexts in which we do find a permanent public domain: they involve resources that are relatively nonrivalrous, where the risk of tragic overuse is low (Rose, 2003, p. 96).

Note that not all forms of IP have the feature of falling inexorably into the public domain when inadequately claimed. For example, abandoned trademarks can be reclaimed by new owners who use them in commerce as source identifiers (which is the rights-triggering analog to possession in the trademark context). So too for potential trademarks that were unsuccessfully claimed by merchants who had not used them enough to qualify for protection. In these ways trademarks are treated like nearly captured foxes, where patents and copyrights are not. This too makes sense if we keep in mind key distinctions on the dimension of rivalrousness. Trademarks are unusual within the IP realm in the degree to which they are subject to congestion externalities—that is, they are subject to overuse. Although it is possible for many people to use the same trademark, if they do it is likely to lose its value as a trademark. Trademarks are effectively rivalrous

---

<sup>9</sup> See n. 5.

<sup>10</sup> But see Landes and Posner (2003, p. 487), arguing that the value of a creative work might be depleted by overuse.

resources. Their value can be maintained (and rebuilt) only if they are kept out of the public domain of indiscriminate use.

In sum, looking to the role of possession in the law of tangible property helps to explain analogous mechanisms of rights acquisition in the realm of IP, and to diagnose their shortcomings. Perhaps more interesting, it also helps to explain a feature that is especially associated with (some forms of) IP: the permanent public domain.

## 2. The challenges of non-possessory property

Although possession is a touchstone for the acquisition and signaling of property rights, property and possession do not always go hand in hand. Consider the challenges posed for both tangible and IP regimes when property rights are held by non-possessors.<sup>11</sup> These challenges arise in the tangible property context when, for example, the claims of current possessors are challenged by prior possessors—with the results often reflecting the enduring notion of ‘first in time, first in right,’ but sometimes prioritizing recent claims over stale ones (as with adverse possession, marketable title acts, and protection for bona fide purchasers). More striking, perhaps, are controversies over property rights held by people who may never have been in possession, but who nonetheless claim the right to control some aspect of a resource. Land servitudes are a classic example, and the anxiety and doctrinal complexity that has marked the body of law governing them (see French, 1982; Rose, 2011; Van Houweling, 2008) serve to reinforce the importance of possession as a touchstone of property reasoning.

To see the relevance of these types of non-possessory property rights to IP, start with a classic passage from Justice Holmes’ 1908 concurrence in *White-Smith Music Publishing Company v. Apollo Company*, in which he considers that nature of copyright as a property right:

The notion of property starts, I suppose, from confirmed possession of a tangible object and consists in the right to exclude others from interference with the more or less free doing with it as one wills. But in copyright property has reached a more abstract expression. The right to exclude is not directed to an object in possession or owned, but is *in vacuo*, so to speak. It restrains the spontaneity of men where but for it there would be nothing of any kind to hinder their doing as they saw fit. It is a prohibition of conduct remote from the persons or tangibles of the party having the right. It may be infringed a thousand miles from the owner and without his ever becoming aware of the wrong. It is a right which could not be recognized or endured for more than a limited time, and therefore, I may remark in passing, it is one which hardly can be conceived except as a product of statute, as the authorities now agree. (209 U.S. 1, 19 (1908) (Holmes, J., concurring))

In drawing the contrast between copyright and paradigmatic possessory property rights in tangible objects, Justice Holmes here emphasizes the non-possessory, ‘*in vacuo*’ nature of copyright and the way in which copyright owners can control strangers from afar, unconnected to any object possessed by the copyright owner. Copyright owners are thus unlike owners of possessory fee simple interests in land, whose rights to exclude generally impact the limited universe of people who come into contact with the physical boundaries of the owner’s parcel.

---

<sup>11</sup> This section draws on my previous work on non-possessory property rights (Van Houweling, 2002, 2007, 2008, 2010, 2011, 2012a, 2013).

Justice Holmes alludes to another apparent copyright anomaly: although copyright owners are not necessarily possessors, the people whose spontaneity is restrained by copyright *are* typically in possession of tangible objects—books, sheet music, or other manifestations of the copyrighted work. As to these tangible objects, copyright operates not as an instrument of freedom from interference for the possessor but rather the opposite: an instrument of constraint operated by strangers (copyright owners) via remote control. Copyright thus strikes Justice Holmes as an odd sort of property right in that instead of liberating people to use their possessions it ‘restrains [their] spontaneity . . . where but for it there would be nothing of any kind to hinder their doing as they saw fit’ (*White-Smith Music Publ’g Co. v. Apollo Co.*, 209 U.S. 1, 19 (1908)).

Copyright owners’ power to control how remote strangers use objects in their possession is not as extraordinary as this passage suggests, however. Of course copyright shares this characteristic with patent and trademark. Beyond IP, copyrights are similar in this regard to a whole set of ‘remote control’ property interests that give their owners the right to control use of assets possessed by other people. Servitudes are the most prominent example.<sup>12</sup>

A servitude (which can take the form of an easement, real covenant, or equitable servitude) is a non-possessory property interest that gives its holder the right to use an asset (typically land) in specified ways, or to object to specified uses of it, or to insist on specified behavior connected to it. The asset is encumbered by the servitude, such that the servitude’s burdens ‘run with’ the asset, ‘pass[ing] automatically to successive owners or occupiers’ (American Law Institute, 2000, § 1.1). Unlike a mere contractual agreement to, say, refrain from operating a gas station in a residential neighborhood, a servitude is enforceable against successors in interest. Therefore, if you grant your neighbor an effective servitude she will be able to enforce the restriction against you and subsequent owners of your land. The benefit of a servitude typically runs to successors as well—from your neighbor to the next owner of her house. As Carol Rose puts it, ‘[t]he greatest overall advantage of servitudes is that they give stability to property arrangements over both time and space’ (Rose, 2011, p.297). The stability that servitudes produce can be especially valuable for land use planning. Land is, of course, immobile and enduring. It is therefore often important for people who invest in land to be able to predict how surrounding land will be used far into the future, in order to make investments that will coordinate rather than conflict with adjacent activities.

In recognition of these benefits, land servitudes and other varieties of remote control property rights have long been enforced by courts. Nonetheless, Justice Holmes’ contention that property rights with such features could only be the product of statute rings somewhat true. Judges have greeted most non-possessory property rights with suspicion and hemmed them in with doctrinal limitations. Servitudes came to be classified into the three major categories of easements, real covenants, and equitable servitudes, with each category subject to convoluted rules limiting formation, subject matter, and enforceability (French, 1982). As I describe in prior work, tracing the evolution of modern servitude law reveals several rationales for this type of hostility and the limiting doctrines that it produced.

---

<sup>12</sup> Other examples include the future interests that accompany various types of defeasible estates. See generally Korngold (1988).

I have organized these rationales into three broad categories: those related to notice and information costs; those related to dead hand control and other aspects of the ‘problem of the future’; and those related to harmful externalities (Van Houweling, 2008).<sup>13</sup>

Turning to IP, the basic anxiety and confusion associated with non-possessory property rights is perhaps unavoidable (unless we abandon IP for some alternative regime), because the structure of modern IP divorces ownership of physical objects embodying works of authorship and novel inventions from ownership of the corresponding copyrights and patents. This suggests that IP law should be acutely attentive to the problems that I associate with non-possessory property rights. Indeed, IP has developed an entire body of doctrine that attempts to mediate the tension between the rights of IP owners and the rights of owners of physical objects embodying IP. This is known as IP ‘exhaustion,’ and has emerged as one of the most contested areas of IP law in an era in which more and more objects of everyday life are burdened with non-possessory IP rights (see, e.g., Perzanowski and Schultz, 2016; Van Houweling, 2016a, 2016b).<sup>14</sup>

To better understand exhaustion and other limitations on remote control property rights, I turn in the next section to one of the key categories of concerns I associate with non-possessory property: notice and information costs.

## **B. Property and Information**

Information costs include the costs of conveying and comprehending information and also the costs imposed by failures to communicate. The monetary cost of a ‘no trespassing’ sign that effectively communicates the location of a land boundary is one type of property-related information cost, as is the mental energy that a passerby expends to read and understand that sign, and the aggravation that arises from inadvertent trespass after the sign falls down. Information costs overlap with transaction costs, a term typically used more generally (and seldom very precisely) to describe the information costs, negotiation costs, and enforcement costs related to voluntary exchanges.<sup>15</sup>

There are many ways in which the doctrines of property law have been shaped by concerns about information costs. Indeed, some scholars suggest that one of the most

<sup>13</sup> Carol Rose offers a similar but not identical categorization, identifying the concerns as involving information or notice, renegotiability, and value (including third-party effects) (Rose, 2011).

<sup>14</sup> The Supreme Court has addressed (and generally reaffirmed the importance of) IP exhaustion repeatedly in recent years. See *Impression Products v. Lexmark, Inc.*, 137 S. Ct. 1523 (2017); *Kirtsaeng v. John Wiley & Sons*, 568 U.S. 519 (2013); *Bowman v. Monsanto*, 569 U.S. 278 (2013); *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. 617 (2008); see also *Omega S.A. v. Costco Wholesale Corp.*, 541 F.3d 982 (9th Cir. 2008), *aff’d* by an evenly divided Court, *Costco Wholesale Corp. v. Omega S.A.*, 562 U.S. 40 (2010).

<sup>15</sup> This characterization is an extreme simplification of the variety of ways in which the term ‘transaction costs’ has been used, as Lee Anne Fennell documents (2013). It maps—roughly—the categories emphasized by Coase (1960) and around which incomplete definitional consensus has formed. As Fennell observes, ‘[t]here is broad agreement that the costs people incur to get together, communicate with each other, and draw up and police contracts represent transaction costs. But the status of some other elements is contested’ (2013, p. 1484). Ellickson characterizes transaction costs within ‘three somewhat overlapping functional categories: (1) get-together costs, (2) decision and execution costs, and (3) information costs’ (1989, p. 615).

fundamental characteristics of property rights is their potential to impose undesirably high information costs, if not properly designed. From this perspective, property doctrine is and should be structured to mitigate information problems.<sup>16</sup>

The argument that information costs are of special concern in property law—compared, for example, to the law of contracts—is based in large part on the observation that property rights are ‘*in rem*,’ or ‘good against the world.’ That is, the obligations that arise from property rights (my obligation to avoid driving past a ‘no trespassing’ sign and onto the land beyond, for example) are not based upon any special relationship between owners and nonowners. These obligations bind complete strangers who encounter things to which property rights attach, regardless of whether they have agreed to be bound.

As Thomas Merrill and Henry Smith, leading proponents of an information-cost-centric theory of property, summarize:

The *in rem* nature of such rights means all actors in the relevant community must recognize that they are subject to a duty to abstain from interfering with such rights insofar as they are held by any other member of the community. This generalized duty, in turn, creates an enormous information cost and collective action problem. The rights must be defined in such a way that their attributes can be easily understood by a huge number of persons of diverse experience and intellectual skills. The identity of the persons who hold such rights must be capable of communication by signals that can be immediately grasped and processed by an equally large multitude (2007, p. 1853).

Merrill and Smith use these observations about the *in rem* nature of property rights to generate a design principle: ‘the rights must be defined in such a way that their attributes can be easily understood’ (2007, p. 1853). Specifically, Merrill and Smith (2000) argue that property rights do and should conform to a limited, standardized set of easy-to-understand forms—not ‘one size fits all,’ but a small menu that resists customization and idiosyncrasy in order to economize on information costs.

Information costs do not always create problems worth solving through adjustments to legal doctrine, however. And even in circumstances in which they might, standardization of easy-to-understand property forms is only one mechanism through which to address those problems. But thinking about the special virtues of standardization and clarity where rights are good against the (vast, heterogenous) world is a good starting point for thinking about the relationship between information costs and rights regimes that govern both tangible and intangible resources. What if the nature of the resource at issue makes it extremely difficult to specify rights to it in a clear, standardized way? Thinking about this dynamic in relation to the nature of the resource helps us to think critically about the design of the law.

IP scholars often contrast tangible and intangible property schemes on the basis of how much information is readily available about the identity of property owners and the nature of their rights. Typically, the comparison holds up tangible property—real property in particular—as the model of successful information provision. Physical signs can provide clues that a piece of land is owned by someone (often the person in possession). Customs

---

<sup>16</sup> Note that not all information costs (or transaction costs more generally) constitute problems to be solved (Cooter, 1982, p. 28; Fennell, 2013, p. 1473).

in the relevant neighborhood can shape how those signs are understood.<sup>17</sup> Public records indicate exactly who that someone is and reveal details about the physical dimensions of the parcel, how its ownership has changed over time, and whether express encumbrances (liens, servitudes, and so on) complicate ownership.<sup>18</sup> These sources of information help to prevent inadvertent trespass by those who wish to avoid invading private land; they facilitate consensual transactions for those who seek permission to use or buy it. IP rights, by contrast, do not so neatly correspond either to physical things in the world or to public records signifying ownership and identifying owners.

Anxiety about the inadequacy of information regarding IP rights has increased in recent years due to statutory changes that have made the situation worse (e.g. the elimination of registration and notice as prerequisites for copyright protection) and to technological changes that have raised the stakes and thickened thickets of (often hidden) rights. In copyright, this anxiety is manifest in policy debates about the status of ‘orphan works’ whose owners cannot be identified and located (e.g. Chiang, 2016; Hansen, 2013; Loren, 2012; Urban, 2012; U.S. Copyright Office, 2006; U.S. Copyright Office, 2015). In patent, critics are alarmed when innovators’ investments are jeopardized by allegations that they have infringed unclear and thus difficult-to-avoid patent claims—especially in the realms of software and Internet business methods (Bessen and Meurer, 2008; Long, 2004; Menell and Meurer, 2013). In both the copyright and patent contexts, informational inadequacies can contribute to inadvertent infringement and then to surprising and costly disputes. Or fear of potential infringement—combined with the inability to identify, locate, and negotiate with relevant rights-holders—can chill productive endeavors (see Federal Trade Commission, 2011, p. 3; U.S. Copyright Office, 2006, p. 15).

One approach to alleviating the information cost challenges that plague IP would be to try to replicate real property’s formal systems of centralized information provision. Copyright reformers, in particular, have called for statutory changes modeled on the centralized ownership information provided by land recording systems and the title-clearing function performed by marketable title acts (e.g. Lessig, 2010, p. 29). This could be accomplished, some argue, by ‘reformatizing copyright’ (e.g. Sprigman, 2004).

The formal, centralized, and sometimes error-prone information mechanisms associated with land titles are not the only models offered by the law of tangible property, however. These structures coexist with other legal mechanisms—including rules about the form of property rights and the remedies triggered by their infringement—that are attentive to information costs concerns. As I have explained elsewhere (Van Houweling, 2013), this common law tradition features a wide variety of doctrinal tools. Even (or perhaps especially) if the formal, centralized informational structures of the land law are never fully replicated for intangible property, this set of tools may prove a valuable source of ideas for addressing contemporary IP challenges.

For example, the touch and concern doctrine has traditionally constrained the subject matter of land servitudes in a way that helps to limit the information cost burden imposed by these potentially confusing non-possessory property rights. Like the other

---

<sup>17</sup> On custom in property and IP, see, e.g., Smith (2009a) and Rothman (2007, 2012).

<sup>18</sup> For a helpful summary of formal information infrastructures in tangible property (with comparison to copyright), see van Gompel (2011, pp. 244–6).

property-standardizing doctrines discussed by Merrill and Smith (2000), touch and concern polices just how idiosyncratically the sticks in the bundle of property can be arranged. By limiting permissible servitudes to those that have a connection to the land they burden (and typically to a neighboring benefitted parcel) the doctrine helps to ensure that servitudes will be relatively easy to discover upon physical inspection, and that the owner of the beneficial interest will be relatively easy to identify and locate (Van Houweling, 2016a, 2016b).

As I have argued elsewhere (Van Houweling 2008, 2011, 2013, 2016a, 2016b), IP exhaustion similarly helps to limit the information cost burden imposed by non-possessory IP rights. It generally allows owners of objects embodying copyrighted works and patented inventions to transfer those objects and to make normal consumer uses of them, consistent with reasonable expectations about what it means to own objects of personal property (see generally Perzanowski and Schultz, 2015, 2016).

The upshot of this comparison is open to debate in light of developments in the law of servitudes, where the trend has been toward liberalization of doctrines like touch and concern in favor of enforcement of even idiosyncratic servitudes. Some observers take this to suggest that IP exhaustion should be similarly liberalized in favor of enforcement of idiosyncratic running restrictions on how IP-burdened objects may be used and transferred (see, e.g., Robinson (2004), but see Van Houweling (2008)). But on this point of comparison we should be careful to keep in mind key differences between tangible property and IP. The doctrinal liberalization in the law of land servitudes has happened in response to the establishment and improvement of recording systems that provide notice of even unusual servitudes. The logic of this doctrinal development might suggest, ironically, quite a different evolution in the law of IP, where digital age developments appear thus far to have exacerbated rather than alleviated information cost problems.

In sum, the nature of property rights poses a recurring set of information cost challenges that are relevant to both tangible property and IP. Although difficult-to-define works of creativity and invention come with special information cost burdens, longstanding doctrines within tangible property law suggest useful tools that might be deployed to mitigate information cost concerns. Doctrines like intellectual property exhaustion, whose analogs and progenitors in the land law are being discarded, remain important for managing IP rights in an increasingly complex information environment.

### **C. Property and Time**

This section focuses on how IP compares to other types of property on the dimension of time—that is, how long the exclusive rights associated with copyrights and patents last compared with the exclusive rights associated with property rights in land and other tangible objects.<sup>19</sup> One oft-cited distinction between copyright and patent law and the laws governing property in tangible things like land and chattels is evident on the face of the constitutional language limiting the duration of authors' and inventors' rights, which may only be secured 'for limited Times' (U.S. Const. art. I, § 8, cl. 8).<sup>20</sup> To those skeptical of

---

<sup>19</sup> This section is derived in part from my previous work (Van Houweling, 2017).

<sup>20</sup> For commentary emphasizing this distinction, see, e.g., Sterk (2005, pp. 446–59) and Bell and Parchomovsky (2002, p. 41).

the notion of copyright and patent as forms of ‘property,’ this finite duration of authors’ and inventors’ rights is one of many ways in which those rights do not and should not operate like property. These skeptics point to the expansion in the duration of copyright as a way in which copyright is becoming more like tangible property and violating the spirit if not the letter of the constitutional limitation.<sup>21</sup> Conversely, some of those who most fully embrace the concept of intellectual *property* argue that copyrights and patents should—like other forms of property—last forever.<sup>22</sup>

All of these scholars and advocates share a similar starting assumption: tangible property rights are potentially infinite in duration, while copyrights and patents are constitutionally required to be for ‘limited times.’ This characterization is ripe for refinement. While the duration of rights to land and other tangible objects may be theoretically infinite, a variety of limiting doctrines operate to terminate these rights when they threaten to prevent societally beneficial use of valuable resources. Long-lived property claims trigger fears about ‘dead hand control,’ a label that reflects underlying anxiety about special types of information and transaction costs that arise as owners move and proliferate and their claims become entangled over time, about threats to the autonomy of the living imposed by enforcing the preferences of prior generations, and about unfair distribution of resources caused by dynastic wealth accumulation. A variety of property doctrines are attentive to these fears. Indeed, the infamous Rule Against Perpetuities is arguably important as a topic of study for property students more for the powerful way that it illustrates the force of the concern with dead hand control than for its contemporary doctrinal significance. The law of adverse possession is similarly important in part for the way in which it illustrates problems caused by the assertion of stale claims.

As for IP, despite express limits on the duration of copyrights and patents, the problems posed by stale, obsolete, and hopelessly entangled rights nonetheless loom large where technology is advancing so rapidly, where there is no natural limit on the proliferation of property claims, and where the public interest in access to the relevant resources often lasts far longer than the property owners’ interest in making available the rights-related information necessary to facilitate voluntary transactions. The issue of time is especially pressing in the copyright context. While the duration of copyright is theoretically limited, for many works it might as well be infinite. This is true, for example, for some so-called ‘orphan works’ whose owners cannot be located. These works may be underused during

---

<sup>21</sup> For example, Lawrence Lessig laments that ‘though the founders never used that term, “intellectual property,” . . . to us, copyright and patents are clearly property rights, and clearly deserve all the absolute and permanent protection that ordinary property deserves’ (2001, p. 1068). Similarly, Simon Stern observes that ‘advocates of heightened copyright protection find it hard to resist the analogy with tangible property when challenging the limited duration of copyright’ (2012, p. 87).

<sup>22</sup> Justin Hughes (2003, pp. 784–5) has documented such arguments:

Motion Picture Association of America President Jack Valenti, for example, has stated publicly that copyrights should be permanent, like any other property right. He has been joined by at least one member of the U.S. Congress, Representative Mary Bono. Ms. Bono and Mr. Valenti carry on the legacy of many nineteenth-century U.S. authors who were advocates of perpetual copyright protection. There is some (many would say, superficial) appeal to their position: If one views a copyright as just another form of property, it makes sense to ask why it is treated differently than the enduring property rights in real estate, chattels, and financial instruments.

their long copyrights because permission to use them in ways subject to copyright cannot be obtained from unfindable owners (U.S. Copyright Office, 2006, p. 15). If such underuse includes a failure to properly preserve or duplicate existing copies of the works (fragile books or films, for example) then their use will also be effectively restricted even after the copyrights have expired.<sup>23</sup> Thus the duration of copyright's restrictions can be practically infinite, and yet tragically worthless in the long run to both lost copyright owners and society at large (Bibb, 2009, pp. 169–71).

The problems associated with orphan works and other unintended consequences of ever-longer copyright terms are well-documented (e.g. Boyle, 2008; Chiang, 2016; Hansen, 2013; Loren, 2012; Urban, 2012; U.S. Copyright Office, 2006; U.S. Copyright Office, 2015). A wide variety of proposals has been offered to address them—including *ex ante* durational limits (Khanna, 2014), more comprehensive recording to help keep track of copyright owners (Landes and Posner, 2003), and time-sensitive application of doctrines like fair use (Hughes, 2003; Liu, 2002). But these proposals are often met with objections framed in terms of property rights, based on the assertion that tangible property rights are infinite and copyrights should be infinite as well (or at least as close to infinite as the Constitution's 'limited times' language will bear) (Hughes, 2003, p. 784–5 (citing examples)).

On closer inspection, it is clear that there are many ways that the duration of property rights in tangible things is in fact limited (Harding, 2009, pp. 292–3). This is especially common for those property rights that—like IP—allow their owners to exercise remote control over resources possessed by others. Return to the passage from *White-Smith v. Apollo* quoted above. Justice Holmes claims that because copyright is a non-possessory, '*in vacuo*,' property right that exerts remote control over strangers, it 'could not be recognized or endured for more than a limited time' (*White-Smith Music Publ'g Co. v. Apollo Co.*, 209 U.S. 1, 19 (1908)). His observation is also aptly applied to the other forms of 'remote control' property discussed above.

On the one hand, servitudes and other non-possessory interests in tangible property (e.g. future interests accompanying defeasible fees) are designed to be durable, and thus to facilitate efficient long-term land use planning that would be difficult to accomplish through bilateral contractual measures alone. (Copyrights, too, are more durable than attempts to control copying of books by extracting express promises from each recipient of a copy.<sup>24</sup>) And yet, this durability can undermine efficiency when land use needs change and transaction costs make the restrictions difficult to renegotiate. Consider, for example, a residential use restriction imposed on a pocket of land hemmed in by noisy new highways. Because the likelihood of changed circumstances and of transactional difficulties increases with the passage of time, the durability of non-possessory property

---

<sup>23</sup> For examples of these types of failures, see Reese (2012, pp. 292–7). Note that these are failures arguably attributable to living copyright owners. In a thought-provoking article, Eva Subotnik has therefore rejected the 'dead hand' as a way of conceptualizing the problems attributable to long (specifically, postmortem) copyright duration, identifying the problem as suboptimal stewardship by the living (2015, pp. 118–24).

<sup>24</sup> Contemporary mass market 'agreements' imposed via click-wrap and other mechanisms that purport to attach to copies of intellectual works and thereby to establish privity of contract with whoever obtains possession of a copy are a different story (see Van Houweling, 2008).

rights contributes to ambivalence about them.<sup>25</sup> The specter of ‘dead hand control’ enforcing obsolete restrictions on living landowners and sacrificing socially beneficial use of resources thus explains much of the longstanding judicial hostility to enforcement of non-possessory property restrictions.

Although no constitutional ‘limited times’ constraint applies to ‘non-intellectual’ property rights, judges and legislators have nonetheless imposed a collection of durational limitations on non-possessory property rights attached to land. Some of these limits (including some versions of the Rule Against Perpetuities) operate *ab initio* to invalidate non-possessory property rights that purport to be perpetual or potentially perpetual. Some serve as durational limits that cause property rights to expire automatically after a certain period of time. Some allow property owners to save their rights from automatic expiration only by recording them periodically. Others operate *ex post* to extinguish property rights that have outlived their usefulness. There remain theoretically perpetual non-possessory property rights, but they are vulnerable to invalidation on a number of different grounds that are facially not about duration but appear to be influenced by concerns related to dead hand control.

I will save consideration of the Rule Against Perpetuities and other limitations on future interests for another day (see Van Houweling, 2017) and focus here on durational limits on servitudes. A few states have enacted strict durational limits on servitudes, winning praise from some commentators (e.g. Rose, 1982, pp. 1413–16; Sweeney, 1995, p. 691; Winokur, 1989, p. 78). In Minnesota, for example, ‘covenants, conditions, or restrictions’ (with some exceptions) expire after 30 years. (Minn. Stat. Ann. § 500.20(2) (2002)). The relevant Massachusetts statute effectively forbids perpetual restrictions by imposing a 30-year default term on any restriction that does not specify its own duration (184 Mass. Gen. Laws 23). As the Supreme Judicial Court has explained, this provision ‘expressly precludes the imposition of perpetual restrictions on land’ and serves to ‘provide definitive endpoints to the term of such restrictions’ (*Brear v. Fagan*, 447 Mass. 68, 77 (2006)).

Many states impose recording and renewal requirements instead of, or in conjunction with, durational limitations on servitudes. In many states, these requirements are imposed by marketable title acts that apply to various types of clouds on title. These statutory provisions generally declare that a landowner whose chain of title goes back for a specified period of time (typically from 20 to 40 years) has marketable title to that land free and clear of any contrary claims that have not been recorded (Van Houweling, 2017, pp. 68–9, n. 82 (citing examples)).

Some states make all of this more explicit, with statutory provisions separate from their general marketable title acts that expressly provide for the automatic expiration of servitudes and/or future interests unless they are periodically recorded. For instance, the Iowa ‘stale use statute’ applies to both future interests and servitudes that restrict the use of land (Iowa Code Ann. § 614.24). The statute limits the duration of land restrictions to 21 years from initial recording unless a claim to extend them is recorded before the expiration of those 21 years. Similarly, in Massachusetts, restrictive servitudes with express durations of more than 30 years nonetheless automatically expire after 30 years

---

<sup>25</sup> Julia Mahoney (2002, 2004) is an especially vocal critic of this type of dead hand control.

unless they are recorded (with renewal recordation required every 20 years thereafter) (184 Mass. Gen. Laws 27).<sup>26</sup>

Ironically, the rise of marketable title acts and similar recording and renewal requirements during the second half of the twentieth century coincided with the elimination of the renewal requirement in US copyright law. Recognition of the unintended negative consequences of that shift have motivated calls to reinstitute some type of registration requirement as a prerequisite for long-lasting copyrights. For example, while serving as Register of Copyrights, Maria Pallante suggested that ‘a formal registration requirement near the end of term may be beneficial to the larger legal framework’ of copyright (Pallante, 2013, p. 1419). The details of her proposal mirror the operation of some of the state law recording schemes just described:

Congress could shift the burden of the last twenty years of protection . . . from the user to the copyright owner, so that at least near the end of the term, the copyright owner would have to file with the Copyright Office as a condition of continued protection. Otherwise, the work would enter the public domain. (Pallante, 2013, p. 1419)

Pallante’s suggestion echoes other proposals to fix copyright by ‘reformatizing’ it, as discussed above. The examples from the tangible property realm suggest that formal requirements that help to justify and track long-lasting remote control rights would not only restore some advantages of historical copyright practice, but also unite copyright with the law that helps to discipline similar rights attached to land. And in the twenty-first century, technology might ease the process of complying with formal requirements, thus avoiding the traps and travails of the earlier era.

In addition to *ex ante* durational limits that set a pre-determined expiration date for restrictive future interests and servitudes or impose an expiration date on those that have not been properly recorded, there are also both common law doctrines and state statutory provisions that operate *ex post* to terminate non-possessory use restrictions once they have outlived their usefulness. Underlying these *ex post* termination rules is the idea that circumstances may change in the years following imposition of a restriction in ways that render what was once a beneficial land use control into an unjustifiable hindrance that is nonetheless difficult to remove through voluntary negotiations. In the case of servitudes, the relevant doctrine transparently reflects this logic: restrictive servitudes can be terminated (or modified, or enforced only with damages as opposed to injunctions) due to ‘changed conditions.’ As the Ninth Circuit put it, ‘[t]he doctrine of changed conditions operates to prevent the perpetuation of inequitable and oppressive restrictions on land use and development that would merely harass or injure one party without benefiting the other’ (Cortese v. United States, 782 F.2d 845, 850–51 (9th Cir. 1986)).

What would it mean to borrow the changed circumstances concept and apply it to copyright? The most straightforward way to incorporate this idea would be for judges applying the case-by-case analysis of the fair use doctrine to include in that inquiry a consideration of the age and continued importance of the copyright at issue. Several scholars have suggested this approach, tying it persuasively to fair use’s statutory factors

---

<sup>26</sup> This is in addition to the Massachusetts provision discussed above, which imposes a 30-year limitation on any use restriction that does not specify its own duration.

(Hughes, 2003; Liu, 2002). Here we see that this approach has a property law pedigree as well.

In sum, courts and legislatures have deployed a range of techniques to limit the problems caused by long-lasting remote control property rights. These techniques include invalidation of some purportedly perpetual or long-lasting interests, mandatory term limits, periodic recording requirements, and *ex post* invalidation of obsolete restrictions. These are in addition to duration-related doctrines that apply to both possessory and remote control property interests (namely, adverse possession and statutes of limitation).

Proposals for addressing problems caused by long-lived IP rights are met with objections often framed in terms of tangible property rights, with some vocal copyright and patent owners insisting that their property should not be uniquely burdened with durational limits, recording obligations, or doctrines that consider the possibility that their rights have outlived their usefulness. But looking carefully at the law of tangible property reveals that such burdens would be far from unique, especially when we examine the law's treatment of non-possessory remote control property rights that are most analogous to IP. There is a long property tradition of looking ambivalently on remote control property—recognizing its potential to serve goals associated with long-term investment in valuable resources but guarding against its potential to unjustifiably constrain resource use long after those goals are accomplished or obsolete.

## V. CONCLUSION

Property rights are uniquely powerful and problematic because of the way they attach to, run with, and exclude people from things. The powers and the problems follow patterns, but also vary depending on the nature of the thing at issue. Keeping this variance in mind as we explore analogies between tangible property and IP allows us to use those analogies to distinguish and diagnose the novel and yet familiar challenges of contemporary IP. As explored in this chapter, attention to both the history of property possession and the special challenges of possession of IP helps to understand and diagnose the shortcomings of doctrines of IP acquisition and signaling. Looking at the special information cost challenges posed by rights that are good against the world helps us to understand how IP might harness more of the doctrinal tools that have traditionally helped mitigate these costs. And examining how the law governing non-possessory rights to tangible property is sensitive to how those rights can cause problems over time helps us to see how durational limits in IP are not confiscatory but rather consistent with property tradition. In sum, understanding IP as property can illuminate rather than obscure the special nature of rights in intellectual creations.

## REFERENCES

- American Law Institute. 2000. *Restatement (Third) of Property: Servitudes*. Philadelphia, PA: American Law Institute.
- Arrow, Kenneth J. 1962. 'Economic Welfare and the Allocation of Resources for Invention,' in Richard R. Nelson, ed., *The Rate and Direction of Inventive Activity: Economic and Social Factors*. Cambridge, MA: National Bureau of Economic Research.

- Barros, Benjamin. 2011. 'The Biology of Possession,' 20 *Widener Law Journal* 291–317.
- Bell, Abraham, and Gideon Parchomovsky. 2002. 'Pliability Rules,' 101 *Michigan Law Review* 1–79.
- Bessen, James, and Michael J. Meurer. 2008. *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*. Princeton, NJ: Princeton University Press.
- Bibb, Megan L. 2009. 'Note, Applying Old Theories to New Problems: How Adverse Possession Can Help Solve the Orphan Works Crises,' 12 *Vanderbilt Journal of Entertainment & Technology Law* 149–81.
- Boyle, James. 2003. 'The Second Enclosure Movement and the Construction of the Public Domain,' 66 *Law & Contemporary Problems* 33–74.
- Boyle, James. 2008. *The Public Domain*. New Haven, CT: Yale University Press.
- Breyer, Stephen. 1970. 'The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs,' 84 *Harvard Law Review* 281–351.
- Calabresi, Guido, and A. Douglas Melamed. 1972. 'Property Rules, Liability Rules, and Inalienability: One View of the Cathedral,' 85 *Harvard Law Review* 1089–128.
- Carrier, Michael A. 2004. 'Cabining Intellectual Property through a Property Paradigm,' 54 *Duke Law Journal* 1–145.
- Chander, Anupam. 2003. 'The New, New Property,' 81 *Texas Law Review* 715–97.
- Chiang, Tun-Jen. 2016. 'Trolls and Orphans,' 96 *Boston University Law Review* 691–715.
- Coase, R.H. 1960. 'The Problem of Social Cost,' 3 *Journal of Law and Economics* 1–44.
- Cohen, Julie E. 2014. 'What Kind of Property is Intellectual Property?,' 52 *Houston Law Review* 691–707.
- Cooter, Robert. 1982. 'The Cost of Coase,' 11 *Journal of Legal Studies* 1–33.
- Dagan, Hanoch. 2012. 'Pluralism and Perfectionism in Private Law,' 112 *Columbia Law Review* 1409–45.
- Demsetz, Harold. 1967. 'Toward a Theory of Property Rights,' 57 *American Economic Review* 347–59.
- Depoorter, Ben. 2011. 'Fair Trespass,' 111 *Columbia Law Review* 1090–135.
- Drassinower, Abraham. 2006. 'Capturing Ideas: Copyright and the Law of First Possession,' 54 *Cleveland State Law Review* 191–204.
- Dukeminier, Jesse, James E. Krier, Gregory S. Alexander, Lior J. Strahilevitz, and Michael Schill. 2014. *Property*. New York, NY: Wolters Kluwer Law & Business.
- Easterbrook, Frank H. 1990. 'Intellectual Property Is Still Property,' 13 *Harvard Journal of Law & Public Policy* 108–18.
- Ellickson, Robert C. 1989. 'The Case for Coase and against "Coaseanism",' 99 *Yale Law Journal* 611–30.
- Epstein, Richard. 1979. 'Possession as the Root of Title,' 13 *Georgia Law Review* 1221–43.
- Epstein, Richard. 2005. 'Liberty versus Property? Cracks in the Foundation of Copyright Law,' 42 *San Diego Law Review* 1–28.
- Epstein, Richard. 2010. 'The Disintegration of Intellectual Property? A Classical Liberal Response to a Premature Obituary,' 62 *Stanford Law Review* 455–521.
- Federal Trade Commission. 2011. *The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition*. Washington, D.C.
- Fennell, Lee Anne. 2009. 'Adjusting Alienability,' 122 *Harvard Law Review* 1403–65.
- Fennell, Lee Anne. 2013. 'The Problem of Resource Access,' 126 *Harvard Law Review* 1471–531.
- Fraleigh, Jill M. 2011. 'Finding Possession: Labor, Waste, and the Evolution of Property,' 39 *Capital University Law Review* 51–83.
- French, Susan F. 1982. 'Toward a Modern Law of Servitudes: Reweaving the Ancient Strands,' 55 *Southern California Law Review* 1261–319.
- Friedman, Ori, and Karen Neary. 2009. 'First Possession beyond the Law: Adults' and Young Children's Intuitions about Ownership,' 83 *Tulane Law Review* 679–90.
- Fromer, Jeanne. 2009. 'Claiming Intellectual Property,' 76 *University of Chicago Law Review* 719–95.
- Ghosh, Shubha. 2007. 'The Fable of the Commons: Exclusivity and the Construction of Intellectual Property Markets,' 40 *U.C. Davis Law Review* 855–90.
- Gibson, James. 2005. 'Once and Future Copyright,' 81 *Notre Dame Law Review* 167–243.
- Ginsburg, Jane. 2010. 'The U.S. Experience with Mandatory Copyright Formalities: A Love/Hate Relationship,' 33 *Columbia Journal of Law & the Arts* 311–48.
- Grey, Thomas C. 1980. 'The Disintegration of Property,' in Roland J. Pennock and John W. Chapman, eds., *Nomos XXII: Property*. New York: New York University Press.
- Hansen, David R., Kathryn Hashimoto, Gwen Hinze, Pamela Samuelson, and Jennifer M. Urban. 2013. 'Solving the Orphan Works Problem for the United States,' 37 *Columbia Journal of Law & the Arts* 1–54.
- Hardin, Garrett. 1968. 'The Tragedy of the Commons,' 162 *Science* 1243–8.
- Harding, Sarah. 2009. 'Perpetual Property,' 61 *Florida Law Review* 285–327.
- Holbrook, Timothy R. 2006. 'Possession in Patent Law,' 58 *SMU Law Review* 123–76.
- Holbrook, Timothy R. 2009. 'Equivalency and Patent Law's Possession Paradox,' 23 *Harvard Journal of Law and Technology* 1–48.

- Holbrook, Timothy R. 2016. 'Patent Anticipation and Obviousness as Possession,' 65 *Emory Law Journal* 987–1050.
- Hughes, Justin. 2003. 'Fair Use across Time,' 50 *UCLA Law Review* 775–800.
- Hughes, Justin. 2012. 'A Short History of "Intellectual Property" in Relation to Copyright,' 33 *Cardozo Law Review* 1293–340.
- Kapczynski, Amy. 2012. 'The Cost of Price: Why and How to Get Beyond Intellectual Property Internalism,' 59 *UCLA Law Review* 970–1026.
- Khanna, Derek. 2014. 'Guarding Against Abuse: The Costs of Excessively Long Copyright Terms,' 23 *CommLaw Conspectus* 52–125.
- Korngold, Gerald. 1988. 'For Unifying Servitudes and Defeasible Fees: Property Law's Function Equivalents,' 66 *Texas Law Review* 533–76.
- Landes, William M., and Richard A. Posner. 2003. 'Indefinitely Renewable Copyright,' 17 *University of Chicago Law Review* 471–518.
- Lemley, Mark A. 1997. 'Romantic Authorship and the Rhetoric of Property,' 75 *Texas Law Review* 873–906.
- Lemley, Mark A. 1999. 'The Modern Lanham Act and the Death of Common Sense,' 198 *Yale Law Journal* 1687–715.
- Lemley, Mark A. 2005. 'Property, Intellectual Property, and Free Riding,' 83 *Texas Law Review* 1031–75.
- Lemley, Mark A. 2016. 'Ready for Patenting,' 96 *Boston University Law Review* 1171–95.
- Lessig, Lawrence. 2001. 'Copyright's First Amendment,' 48 *UCLA Law Review* 1057–73.
- Lessig, Lawrence. 2010. 'For the Love of Culture: Google, Copyright, and Our Future,' 241 *The New Republic* 24–30.
- Liivak, Oskar, and Eduardo Peñalver. 2013. 'The Right Not to Use in Property and Patent Law,' 98 *Cornell Law Review* 1437–93.
- Litman, Jessica. 2016. 'What Notice Did,' 96 *Boston University Law Review* 717–44.
- Liu, Joseph. 2002. 'Copyright and Time: A Proposal,' 101 *Michigan Law Review* 409–81.
- Liu, Joseph P. 2016. 'Fair Use, Notice Failure, and the Limits of Copyright as Property,' 96 *Boston University Law Review* 833–56.
- Long, Clarisa. 2004. 'Information Costs in Patent and Copyright,' 90 *Virginia Law Review* 465–549.
- Loren, Lydia Pallas. 2012. 'Abandoning the Orphans: An Open Access Approach to Hostage Works,' 27 *Berkeley Technology Law Journal* 1431–70.
- Lueck, Dean. 1995. 'The Rule of First Possession and the Design of the Law,' 38 *Journal of Law and Economics* 393–436.
- Lunney, Glynn S. 1999. 'Trademark Monopolies,' 48 *Emory Law Journal* 367–486.
- Mahoney, Julia D. 2002. 'Perpetual Restrictions on Land and the Problem of the Future,' 88 *Virginia Law Review* 739–87.
- Mahoney, Julia D. 2004. 'The Illusion of Perpetuity and the Preservation of Privately Owned Lands,' 44 *Natural Resources Journal* 573–600.
- Menell, Peter S. 2007a. 'The Property Rights Movement's Embrace of Intellectual Property: True Love or Doomed Relationship?,' 34 *Ecology Law Quarterly* 713–54.
- Menell, Peter S. 2007b. 'Intellectual Property and the Property Rights Movement,' 30 *Regulation* 36–42.
- Menell, Peter S. 2011. 'Governance of Intellectual Resources and the Disintegration of Intellectual Property in the Digital Age,' 26 *Berkeley Technology Law Journal* 1523–59.
- Menell, Peter S. 2016. 'Economic Analysis of Copyright Notice: Tracing and Scope in the Digital Age,' 96 *Boston University Law Review* 967–1023.
- Menell, Peter S., and Michael Meurer. 2013. 'Notice Failure and Notice Externalities,' 5 *Journal of Legal Analysis* 1–53.
- Merges, Robert P. 2011. *Justifying Intellectual Property*. Cambridge, MA: Harvard University Press.
- Merrill, Thomas W., and Henry E. Smith. 2000. 'Optimal Standardization in the Law of Property,' 110 *Yale Law Journal* 1–69.
- Merrill, Thomas W., and Henry E. Smith. 2007. 'The Morality of Property,' 48 *William and Mary Law Review* 1849–95.
- Mossoff, Adam. 2005. 'Is Copyright Property?,' 42 *San Diego Law Review* 29–43.
- Nachbar, Thomas B. 2007. 'The Comedy of the Market,' 30 *Columbia Journal of Law and the Arts* 453–66.
- Oliar, Dotan, and James Y. Stern. 2019. 'Right on Time: First Possession in Property and Intellectual Property,' 99 *Boston University Law Review* 395–458.
- Pallante, Maria A. 2013. 'The Curious Case of Copyright Formalities,' 28 *Berkeley Technology Law Journal* 1415–23.
- Parchomovsky, Gideon, and Peter Siegelman. 2002. 'Towards an Integrated Theory of Intellectual Property,' 88 *Virginia Law Review* 1455–528.
- Perzanowski, Aaron, and Jason Schultz. 2015. 'Reconciling Intellectual and Personal Property,' 90 *Notre Dame Law Review* 1211–63.

- Perzanowski, Aaron, and Jason Schultz. 2016. *The End of Ownership: Personal Property in the Digital Economy*. Cambridge, MA: MIT Press.
- Radin, Margaret Jane. 1987. 'Market-Inalienability,' 100 *Harvard Law Review* 1849–937.
- Reese, R. Anthony. 2012. 'What Copyright Owes the Future,' 50 *Houston Law Review* 287–317.
- Robinson, Glen O. 2004. 'Personal Property Servitudes,' 71 *University of Chicago Law Review* 1449–523.
- Rose, Carol M. 1982. 'Servitudes, Security and Assent: Some Comments on Professors French and Reichman,' 55 *Southern California Law Review* 1403–16.
- Rose, Carol M. 1985. 'Possession as the Origin of Property,' 52 *University of Chicago Law Review* 73–88.
- Rose, Carol. 1986. 'The Comedy of the Commons: Custom, Commerce, and Inherently Public Property,' 53 *University of Chicago Law Review* 711–81.
- Rose, Carol M. 2003. 'Romans, Roads, and Romantic Creators: Traditions of Public Property in the Information Age,' 66 *Law & Contemporary Problems* 89–110.
- Rose, Carol. 2011. 'Servitudes,' in Kenneth Ayotte and Henry E. Smith, eds., *Research Handbook on the Economics of Property Law*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.
- Rose, Mark. 1995. *Authors and Owners: The Invention of Copyright*. Cambridge, MA: Harvard University Press.
- Rothman, Jennifer. 2007. 'The Questionable Use of Custom in Intellectual Property,' 93 *Virginia Law Review* 1899–982.
- Rothman, Jennifer. 2012. 'Custom, the Common Law and Intellectual Property,' in Shyamkrishna Balganesh, ed., *Intellectual Property and the Common Law*. Cambridge, UK: Cambridge University Press.
- Samuelson, Pamela. 1989. 'Information as Property: Do Ruckelshaus and Carpenter Signal a Changing Direction in Intellectual Property Law?,' 38 *Catholic University Law Review* 365–400.
- Samuelson, Pamela, and the Copyright Principles Project. 2010. 'The Copyright Principles Project: Directions for Reform,' 25 *Berkeley Technology Law Journal* 1175–245.
- Samuelson, Pamela. 2016. 'Notice Failures Arising from Copyright Duration Rules,' 96 *Boston University Law Review* 667–89.
- Singer, Joseph William. 2014a. 'Justice Breyer, Grokster, and the Four Chords Song,' 128 *Harvard Law Review* 483–7.
- Singer, Joseph William. 2014b. 'Property as the Law of Democracy,' 63 *Duke Law Journal* 1287–335.
- Smith, Henry E. 2003. 'The Language of Property: Form, Context, and Audience,' 55 *Stanford Law Review* 1105–91.
- Smith, Henry E. 2007. 'Intellectual Property as Property: Delineating Entitlements in Information,' 116 *Yale Law Journal* 1742–822.
- Smith, Henry E. 2009a. 'Community and Custom in Property,' 10 *Theoretical Inquiries in Law* 5–41.
- Smith, Henry. 2009b. 'Institutions and Indirectness in Intellectual Property,' 157 *University of Pennsylvania Law Review* 2083–133.
- Smith, Henry E. 2012. 'Property as the Law of Things,' 125 *Harvard L. Rev.* 1691–726.
- Sprigman, Christopher. 2004. 'Reform(aliz)ing Copyright Law,' 57 *Stanford Law Review* 485–568.
- Stake, Jeffrey Evans. 2004. 'The Property "Instinct,"' 359 *Philosophical Transactions of the Royal Society B* 1763–74.
- Sterk, Stewart E. 1996. 'Rhetoric and Reality in Copyright Law,' 94 *Michigan Law Review* 1197–249.
- Sterk, Stewart. 2005. 'Intellectualizing Property: The Tenuous Connections between Land and Copyright,' 83 *Washington University Law Quarterly* 417–70.
- Stern, Simon. 2012. 'From Author's Right to Property Right,' 62 *University of Toronto Law Journal* 29–91.
- Subotnik, Eva E. 2015. 'Copyright and the Living Dead?: Succession Law and the Postmortem Term,' 29 *Harvard Journal of Law & Technology* 77–125.
- Sweeney, Michael J.D. 1995. 'The Changing Role of Private Land Restrictions: Reforming Servitude Law,' 64 *Fordham Law Review* 661–96.
- United States Copyright Office. 2006. *Report on Orphan Works*. Washington, D.C.
- United States Copyright Office. 2015. *Orphan Works and Mass Digitization: A Report of the Register of Copyrights*. Washington, D.C.
- Urban, Jennifer M. 2012. 'How Fair Use Can Help Solve the Orphan Works Problem,' 27 *Berkeley Technology Law Journal* 1379–429.
- Vaidhyanathan, Siva. 2001. *Copyrights and Copywrongs*. New York: NYU Press.
- Van Houweling, Molly Shaffer. 2002. 'Cultivating Open Information Platforms: A Land Trust Model,' 1 *Journal of Telecommunications and High Technology Law* 309–23.
- Van Houweling, Molly. 2005. 'Distributive Values in Copyright,' 83 *Texas Law Review* 1535–79.
- Van Houweling, Molly Shaffer. 2007. 'Cultural Environmentalism and the Constructed Commons,' 70-SPG *Law and Contemporary Problems* 23–50.
- Van Houweling, Molly Shaffer. 2008. 'The New Servitudes,' 96 *Georgetown Law Journal* 885–950.
- Van Houweling, Molly Shaffer. 2010. 'Author Autonomy and Atomism in Copyright Law,' 96 *Virginia Law Review* 549–642.

- Van Houweling, Molly Shaffer. 2011. 'Touching and Concerning Copyright,' 51 *Santa Clara Law Review* 1063–85.
- Van Houweling, Molly Shaffer. 2012a. 'Technology and Tracing Costs: Lessons from Real Property,' in Shyamkrishna Balganes, ed., *Intellectual Property and the Common Law*. Cambridge, UK: Cambridge University Press.
- Van Houweling, Molly Shaffer. 2012b. 'Atomism and Automation,' 27 *Berkeley Technology Law Journal* 1417–501.
- Van Houweling, Molly Shaffer. 2013. 'Land Recording and Copyright Reform,' 28 *Berkeley Technology Law Journal* 1497–510.
- Van Houweling, Molly Shaffer. 2016a. 'Exhaustion and Personal Property Servitudes,' in Irene Calboli and Edward Lee, eds., *Research Handbook on IP Exhaustion and Parallel Imports*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.
- Van Houweling, Molly Shaffer. 2016b. 'Exhaustion and the Limits of Remote-Control Property,' 93 *Denver Law Review* 951–74.
- Van Houweling, Molly S. 2017. 'Disciplining the Dead Hand of Copyright: Durational Limits on Remote Control Property,' 30 *Harvard Journal of Law & Technology* 53–74.
- van Gompel, Stef. 2011. *Formalities in Copyright Law*. Alphen aan den Rijn, The Netherlands: Kluwer Law International.
- Walterscheidt, Edward C. 1994. 'To Promote the Progress of Science and Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution,' 2 *Journal of Intellectual Property Law* 1–56.
- Winokur, James L. 1989. 'The Mixed Blessings of Promissory Servitudes: Toward Optimizing Economic Utility, Individual Liberty, and Personal Identity,' 1989 *Wisconsin Law Review* 1–97.
- Yen, Alfred C. 1990. 'Restoring the Natural Law: Copyright as Labor and Possession,' 51 *Ohio State Law Journal* 517–59.

## Legislative Materials

- U.S. Const. art. I, § 8, cl. 8.  
17 U.S.C. § 102.  
35 U.S.C. § 102(a)–(b), § 112.  
184 Mass. Gen. Laws 23.  
184 Mass. Gen. Laws 27.  
Iowa Code Ann. § 614.24.  
Minn. Stat. Ann. § 500.20(2).

## Cases

- Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co., 598 F.3d 1336 (2010).  
Bowman v. Monsanto, 569 U.S. 278 (2013).  
Brear v. Fagan, 447 Mass. 68 (2006).  
Cortese v. United States, 782 F.2d 845 (9th Cir. 1986).  
Costco Wholesale Corp. v. Omega S.A., 562 U.S. 40 (2010).  
Impression Products v. Lexmark, Inc., 137 S. Ct. 1523 (2017).  
Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470 (1974).  
Kirtsaeng v. John Wiley & Sons, 568 U.S. 519 (2013).  
Omega S.A. v. Costco Wholesale Corp., 541 F.3d 982 (9th Cir. 2008).  
Pierson v. Post, 3 Cai. 175 (N.Y. 1805).  
Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617 (2008).  
White-Smith Music Publishing Company v. Apollo Company, 209 U.S. 1 (1908).