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Right on Time: First Possession in Property and Intellectual Property

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ABSTRACT

How should we allocate property rights in unowned tangible and intangible resources? This Article develops a model of original acquisition that draws together common law doctrines of first possession with original acquisition doctrines in patent, copyright, and trademark law. The common denominator is time: in each context, doctrine involves a trade-off between assigning entitlements to resources earlier or later in the process of their development and use. Early awards risk granting exclusivity to parties who may not be capable of putting resources to their best use. Late awards prolong contests for ownership, which may generate waste or discourage acquisition efforts in the first place. While the doctrinal resolution of these timing questions varies in different resource contexts, the determination depends upon a recurring and discrete set of functional considerations. This Article applies its theory to assess a host of doctrinal features in our patent, copyright, and trademark laws, to analyze recent intellectual property law developments, and to suggest directions for reform.

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INTRODUCTION

Time is central to intellectual property ("IP") law. Congress, courts, and scholars rightfully give considerable attention to questions about when IP rights should end,[1] but there is comparatively little analysis of when they should begin. While ownership of IP rights might be expected to start at original acquisition through creation[2] or use,[3] matters are not quite so simple.

The foundation of ownership is first possession. Though some treat this as a normative or philosophical proposition,[4] this Article means it in a positive, practical sense. Ordinarily, someone comes to own something by acquiring title from someone else who owned it, who acquired title from someone else who owned it before that, and so on, until one gets back to the very first owner and the so-called "root" of title.[5] But how did the first owner come to own it? How, in other words, do things come to be owned?[6] The basic answer property law gives is first possession: ownership of an unowned resource goes to whomever does something referred to as "possessing" it before anyone else.[7]

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[1] *See* U.S. CONST. art. I, § 8, cl. 8 (empowering Congress to secure IP rights that last for "limited [t]imes"); 15 U.S.C. § 1127 (2012) (defining "abandoned" trademark as among other things, when mark becomes a generic name for goods it designates); 17 U.S.C. § 302(a) (2012) (stating that copyrights of individual authors generally expire seventy years after author's death); 35 U.S.C. § 154(2) (2012) (stating that patents generally expire twenty years after they are applied for); Eldred v. Ashcroft, 537 U.S. 186, 189 (2003) (upholding constitutionality of copyright term after it was extended by twenty years against arguable violation of "limited [t]imes" clause); WILLIAM D. NORDHAUS, INVENTION, GROWTH, AND WELFARE: A THEORETICAL TREATMENT OF TECHNOLOGICAL CHANGE 76-80 (1969) (providing canonical theoretical framework for setting optimal patent term).

[2] *See* 17 U.S.C. § 102 (stating that copyrights are generally granted to whoever fixes original work of authorship in physical object); 35 U.S.C. § 101 (stating that patents are generally granted to whoever invents any new and useful invention).

[3] Trademarks have long been awarded to whoever was the first to merely adopt and use a mark in commerce. *See* Hydro-Dynamics, Inc. v. George Putnam & Co., 811 F.2d 1470, 1473 (Fed. Cir. 1987) ("The requirements of both adoption and use devolve from the common law; trademark rights in the United States are acquired by such adoption and use . . . ."); *see also* 15 U.S.C. § 1127 (defining "use in commerce" as "bona fide use of a mark in the ordinary course of trade").

[4] *See, e.g.*, JOHN LOCKE, TWO TREATISES OF GOVERNMENT 306 (Peter Laslett ed., Cambridge Univ. Press 1960) (1690) ("He that is nourished by the Acorns he pickt up under an Oak, or the Apples he gathered from the Trees in the Wood, has certainly appropriated them to himself. . . . I ask then, When did they begin to be his? . . . And 'tis plain, if the first gathering made them not his, nothing else could.").

[5] *See* Carol M. Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73, 73 (1985).

[6] *See id.* (theorizing why certain actions, namely possession, allow one to obtain ownership of things).

[7] *See* 2 WILLIAM BLACKSTONE, COMMENTARIES *3 (noting that "whoever was in occupation of any determinate spot of [ground] . . . acquired for the time a sort of ownership");

Modern readers may be tempted to dismiss first possession as an essentially antiquarian topic, given that so much of the tangible substance of the planet is already owned, but the temptation should be resisted.[8] There are a number of reasons why an understanding of first possession remains valuable, and this Article concentrates on one of particular significance: first possession is the principal device used to award exclusive rights to the products of human imagination and ingenuity—that is, in the field of intellectual property.[9] This is no small matter. In recent years, more than one million new IP rights have been registered with the U.S. government annually, reflecting claims to everything from pharmaceutical drugs to pop songs and from product logos to computer code,[10] and many more have been created but not registered.[11] Information is the most valuable resource of our age and the yet-to-be-owned expanses of human creativity are seemingly endless. Attention to the rules allocating IP rights remains critical.

Are we doing a good job propertizing creations of the mind? Do existing laws and doctrines tend to "promote the Progress of Science and useful Arts," the constitutional aim of U.S. patent and copyright laws?[12] Or can these rules be

Dean Lueck, *First Possession*, *in* 2 NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 132, 133-36 (Peter Newman ed., 1998) (describing first possession as rule which "grants an ownership claim to the party that gains control before other potential claimants").

[8] The 1890 Census declared that the frontier region of the United States no longer existed. *See* FREDERICK JACKSON TURNER, THE FRONTIER IN AMERICAN HISTORY 1 (1920) ("[A]t present the unsettled area has been broken into by isolate bodies of settlement that there can hardly be said to be a frontier line."); Thomas W. Merrill, *Accession and Original Ownership*, 1 J. LEGAL ANALYSIS 459, 460 (2009) (suggesting principles of accession are primary mechanism by which original title to property is established).

[9] *Cf.* JOHN F. KENNEDY, "LET THE WORD GO FORTH": THE SPEECHES, STATEMENTS, AND WRITING OF JOHN F. KENNEDY 101 (Theodore C. Sorensen ed., 1988) (declaring "New Frontier" beyond which "are the uncharted areas of science and space").

[10] For example, more than three hundred thousand patents were issued, and three hundred thousand trademarks and four hundred thousand copyrights were registered in 2016, the last year for which all statistics are available. *See* U.S. COPYRIGHT OFFICE, FISCAL 2016 ANNUAL REPORT 16 (2016), https://www.copyright.gov/reports/annual/2016/ar2016.pdf [https://perma.cc/4XUA-C5YC] (stating that 414,269 copyrights were registered in 2016); U.S. PATENT & TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT 178, 193 (2016), https://www.uspto.gov/sites/default/files/documents/USPTOFY16PAR.pdf [https://perma.cc/GF8M-A77D] (stating that 334,107 patents were issued in 2016 and that 309,188 trademarks were registered).

[11] Copyrights and trademarks do not require registration as a prerequisite for their validity, which depends only on fixation of an original work in a physical object or on the use of a distinctive mark in commerce, respectively. *See, e.g.*, 17 U.S.C. § 102(a) (2012); 15 U.S.C. § 1052(f) (2012).

[12] U.S. CONST. art. I, § 8, cl. 8; Dotan Oliar, *Making Sense of the Intellectual Property Clause: Promotion of Progress as a Limitation on Congress's Intellectual Property Power*, 94 GEO. L.J. 1771, 1845 (2006) (arguing that promotion of progress is not merely preambular

improved to better advance knowledge and human welfare? As the major frontiers left for the human race to conquer increasingly become intangible, a thorough understanding of the principles of first possession can help us perfect our management of this legal frontier by implementing the lessons from the common law's long experience with the award of rights in physical resources. This is particularly so in light of the special challenges that intangible resources present. However difficult the concept of possession may sometimes be to apply to physical goods,[13] it is immensely more complicated for "things" that exist only in the mind's eye. Custom and intuition provide less reliable safety nets, making a good theoretical grip on the concept of possession particularly valuable.

What, then, counts as first possession under traditional legal principles? For centuries, the common law wrestled with the concept of possession and the problem of defining those actions sufficient to confer rights in things that are unowned.[14] The rule of first possession was applied across a broad swath of resources, and the specific conduct qualifying as possession varied with the nature of the resource.[15] Behavior as diverse as the snaring or killing of a wild animal,[16] diverting a stream of water to farmland,[17] digging above a mineral

statement of purpose, but rather constitutional limitation subject to deferential standard of review).

[13] *See, e.g.*, Popov v. Hayashi, No. 400545, 2002 WL 31833731, at *1, *2 (Cal. Super. Ct. Dec. 18, 2002) (determining owner of historic home run ball when one individual had actual possession, while another made substantial steps towards possession before being illegally interfered with by a third party in his attempt).

[14] *See* Rose, *supra* note 5, at 73 ("The law tells us what steps we must follow to obtain ownership of things, but we need a theory that tells us why these steps should do the job.").

[15] John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 447 (2004) (noting that although "rule-of-capture" is applied to both mining and patent claims, application of rule varies with each subject).

[16] *See* Pierson v. Post, 3 Cai. 175, 175 (N.Y. Sup. Ct. 1805) (holding that possession of wild animal required capturing or mortally wounding it, rather than simply giving chase); DALE D. GOBLE & ERIC T. FREYFOGLE, WILDLIFE LAW: CASES AND MATERIALS 98-100 (2002) (describing early notions of property rights in hunting and capturing "beasts of the forest").

[17] *See, e.g.*, Eddy v. Simpson, 3 Cal. 249, 251-52 (1853) (holding first possession of water not to be possession of fluid itself, but rather its use).

deposit,[18] and viewing a sunken ship at the bottom of the ocean with a submersible camera[19] have been treated as acts of possession.[20]

As varied and idiosyncratic as these different actions may seem, patterns can nevertheless be discerned. One of the clearest ways to make sense of the seeming hodgepodge of possessory rules is to think about them in terms of a common metric: time. Each of these possessory practices can usefully be placed on a chronology starting with the first preliminary steps necessary to appropriate the resource at issue and ending when the resource is consumed, commercialized, or otherwise put to use.[21] The common law has tended to embrace either of two approaches to first possession within the context of this chronology. One recognizes an exclusive claim upon a resource when a claimant has undertaken substantial investments and remains in hot pursuit—what this Article calls a first-committed-searcher rule.[22] The other approach withholds any protection until a claimant has somehow changed the resource in such a way that the claimant is able to control and use it—what this Article calls a rule of capture.[23] This distinction between first possession rules in physical resources is key to understanding original acquisition rules in IP law.

We begin by exploring the relative advantages and disadvantages of these approaches in their application to tangible goods, setting out a framework to analyze first possession questions. Prior scholarship noted many of the issues

[18] *See* Union Oil Co. v. Smith, 249 U.S. 337, 346-48 (1919) (holding that while one permissibly explores public lands for minerals, one has substantial interest in any minerals as long as one puts forth persistent and diligent effort in ones prospecting).

[19] *See* Columbus-America Discovery Grp. v. Atl. Mut. Ins., 974 F.2d 450, 465 (4th Cir. 1992) (holding that viewing sunken ship with submersible camera was sufficient to create possessory interest in ship).

[20] *See* Richard A. Epstein, *The Allocation of the Commons: Parking on Public Roads*, 31 J. LEGAL STUD. 515, 515 (2002) (analyzing how different systems of allocation in parking, including possession of spaces, metered parking, and parking permits, effect formation and transformation of property rights in parking spaces); Gregg W. Kettles, *Formal Versus Informal Allocation of Land in a Commons: The Case of the Macarthur Park Sidewalk Vendors*, 16 S. CAL. INTERDISC. L.J. 49, 72-73 (2006) (discussing practices allocating sidewalk spots to street vendors in Los Angeles).

[21] *See* Arun S. Subramanian, *Assessing the Rights of IRU Holders in Uncertain Times*, 103 COLUM. L. REV. 2094, 2102-04 (2003) (asserting that most modern commentators view rights of use, possession, and disposition as essential to establishing property rights); *see also* 26 U.S.C. § 7701(e)(1)(B) (2012) (identifying transfer of control as indicative of lease transfer); *Property*, BLACK'S LAW DICTIONARY (10th ed. 2014) (defining property as right to possess, use, and enjoy). Property has been defined as requiring "control over [an] item and an intent to control it or to exclude others from it." ROGER BERNHARDT & ANN M. BURKHART, REAL PROPERTY IN A NUTSHELL 4 (7th ed. 2016).

[22] *See* WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 17 (2003).

[23] *See* Lueck, *supra* note 7, at 135 (describing actual capture as "capturing or 'reducing to possession' a flow from the asset").

that first possession rules present, but does so in a fragmented and often unidirectional manner, with some commentators stressing the problems we attribute to later awards and others stressing the problems we associate with earlier ones.[24] What is missing is a comprehensive overview of the considerations at play and an understanding of how these concerns relate to one another and to the structure of first possession.

The essential tradeoff this Article identifies is as follows. On the one hand, when exclusive rights vest early in the process of ultimate appropriation and use, there is a risk those rights will be awarded to a party who will ultimately fail to capture and use the resource.[25] On the other hand, when exclusive rights vest late in the process, there is the danger either of a longer period of potentially wasteful investment by parties competing to own the resource[26] or of potential capturers opting to stay home because of the risk of losing investments prior to capture—especially to free-riders profiting from the work they have done.[27] At its core, first possession presents an ever-present tension between two recurring sets of opposing concerns, one of which counsels in favor of earlier awards and the other in favor of later ones. That tension does not necessarily result in a stalemate, however, and its proper resolution in one context does not entail a single solution to problems in all others. In different areas, the optimal timing of an award of property rights is a function of the relative strength of these countervailing concerns.

Elaborating on this tradeoff, this Article develops a framework to analyze and evaluate the rules that govern the award of IP rights. In different areas within our patent, copyright, and trademark systems, legal doctrine uses variants of the two conceptions of the first possession rule to determine when exclusive rights

[24] *See supra* notes 17-23 and accompanying text (discussing articles and cases that dealt with some of respective problems with late and early rewards of possession).

[25] *See* Columbia Motor Car Co. v. C. A. Duerr & Co., 184 F. 893, 904-11 (2d Cir. 1911) (discussing controversial Selden patent, where Selden was awarded automobile patent before Henry Ford, but court held that Ford did not infringe on patent due to Selden's inferior combination of automobile components and alleged lack of advancement of automobile industry); U.S. Patent No. 549,160 (filed May 8, 1879). Other potential drawbacks of early awards include the creation of incentives to carry out actions that are not ultimately necessary to the ultimate deployment of the resource.

[26] Yoram Barzel, *Optimal Timing of Innovations*, 50 REV. ECON. & STAT. 348, 348-49 (1968) (recognizing that "competition between potential innovators to obtain priority rights . . . from innovations can result in premature applications of discoveries").

[27] *Cf.* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977) (viewing system which follows prospect theory of patents as set of opportunities to pursue technological advances with associated set of probabilistic costs and returns). Other potential costs include overinvestment in other aspects of the claiming process, such as by inefficiently accelerating the process of development, as well as what might be called anticompetitive behavior like secrecy and sabotage. *See infra* Part I (discussing first possession rule).

are established and who among competing claimants should receive them. One of the lessons that emerges from the study of IP doctrine is the dual function that first possession rules play. Most obviously, first possession serves to resolve disputes among rival contenders for exclusive rights in the same resource. But first possession also sets the conditions for the acquisition of exclusive rights as such, establishing what a person must do for exclusive rights to vest, whether in tangible property or intellectual property.[28]

The picture that emerges is complex, but modeling the rules governing the award of IP rights in terms of first possession helps us understand those rules and their implications more clearly. For example, many of the reforms undertaken in response to what are thought to be abuses by so-called "patent trolls" reflect an attempt to push the award of patent rights later in time.[29] This suggests, on the one hand, that the patent troll problem is connected with early awards of patent rights, and on the other hand, that policymakers should be vigilant to ensure that the benefits of delaying the award of rights are compared against the full range of the costs associated with later awards cataloged in the discussion that follows.

Analogizing intellectual property to property is not free from difficulty,[30] and the limits of our approach should be understood. The conceptual structure borrowed from traditional property law can illuminate principles at work in IP law. At the same time, however, the notion of intellectal property is an analogy, not necessarily an identity. What this Article wishes to highlight here are fundamental similarities with respect to the theory and doctrines of original acquisition. This does not deny substantial theoretical and doctrinal differences between property and intellectual property.

Modeling intellectual property with a possessory framework must be done with sensitivity to differences in context. In the IP arena, concerns over notice and information are much more pronounced than they are with respect to tangible resources. Often, such concerns can be substantially mitigated through the creation of registries and other notice mechanisms, and once in place, such institutional devices may facilitate a more flexible approach to original acquisition than might otherwise be feasible. The rules can more closely track the idealized trade-off that shapes first possession doctrine, but they are also more fluid because the nature of the claimable resources themselves is more up-for-grabs. Not surprisingly, IP doctrine entails greater variation in the rules that

[28] *See infra* notes 39-49 and accompanying text (reviewing criteria under which one may gain exclusive rights through first possession).

[29] *See infra* Part III.A.1.

[30] *Compare* Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1032 (2005) (resisting notion that property law provides proper conceptual framework for directing our thinking about IP law), *with* Frank H. Easterbrook, *Intellectual Property Is Still Property*, 13 HARV. J.L. PUB. POL'Y 108, 118 (1990) (suggesting there is no conceptual difference between tangible and intellectual property).

set the time of a right's award than does common-law property.[31] There are also many instances in which IP doctrine changed the specific time at which exclusive rights can be acquired. Sometimes, doctrinal change pushed that time of acquisition earlier, such as in the case of intent to use applications in trademark law, but other times later in time, such as in the case of the America Invents Act. This variation, this Article suggests, has to do with the more frequent changes in the relative costs and benefits of awarding rights earlier and later in time, and of providing notice and administering exclusive rights in information, in the dynamic market settings in which IP rights operate.

This Article is not the first academic work to explore the practical effects of first possession rules,[32] but it is the first to develop a comprehensive account of the major considerations that shape the doctrinal form of first possession and to describe the design of first possession rules in terms of a consistent set of policy tradeoffs between early and late awards of rights. Neither is this Article the first to suggest parallels between IP doctrines and first possession[33] or to raise questions about the timing of the award of IP rights.[34] It is, however, the first to

[31] *E.g.*, Leahy-Smith America Invents Act, Pub. L. 112-29, 125 Stat. 284, 329 (2011) (codified as amended in scattered sections of 35 U.S.C.) (amending time in which patents expire).

[32] The leading article is Dean Lueck, *The Rule of First Possession and the Design of the Law*, 38 J.L. & ECON. 393, 430-31 (1995) (observing effects of first possession rules on variety of legal fields).

[33] *See* Abraham Drassinower, *Capturing Ideas: Copyright and the Law of First Possession*, 54 CLEV. ST. L. REV. 191, 191 (2006) (analogizing originality requirement in copyright law to first possession requirement in property); Timothy R. Holbrook, *Equivalency and Patent Law's Possession Paradox*, 23 HARV. J.L. & TECH. 1, 4 (2009) (discussing similarities and differences between patent and property law in applying principles of actual and constructive possession); Timothy R. Holbrook, *Patent Anticipation and Obviousness as Possession*, 65 EMORY L.J. 987, 1035 (2016) (drawing parallel between enablement in patent law and possession in property); Timothy R. Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 175 (2006) (arguing that enablement is best means to demonstrate property-like possession in patent law); Lisa Larrimore Oullette, Pierson, *Peer Review, and Patent Law*, 69 VAND. L. REV. 1825, 1826 (2016) (comparing grant of possession in *Pierson* to more causal standard applied in patent law which favors early chasers who put in little effort); Alfred C. Yen, *Restoring the Natural Law: Copyright as Labor and Possession*, 51 OHIO ST. L.J. 517, 531 (1990) (outlining "basic copyright doctrines of originality and the idea/expression dichotomy and then comparing them to the natural law of property through labor and possession").

[34] *See, e.g.*, Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 HASTINGS L.J. 65, 70 (2009) (criticizing legal incentives to file for patents early); Paul R. Gugliuzza, *Early Filing and Functional Claiming*, 96 B.U. L. REV. 1223, 1227 (2016) (noting complexities and variables in determining optimal timing of patent issuance); Kitch, *supra* note 27, at 285 (considering how awarding patents based on priority induces inefficiency in early invention); Mark A. Lemley, *Ready for Patenting*, 96 B.U. L. REV. 1171, 1186 (2016) (noting problems with early filing on patent issuance).

undertake a systematic examination of first possession in IP law and to explicate the similarities, and differences, in the functional considerations that underlie first possession doctrines in physical property and across the three major areas of IP law: patent, copyright, and trademark.

This Article proceeds in three stages. Part I outlines the role of first possession doctrines in property law, pointing out differences in the way first possession is approached in different contexts and discussing reasons for these differences. It advances a general framework of original acquisition to guide inquiries into the timing of property awards built around the characteristic tradeoffs that early and late awards entail. Part II turns to intellectual property. It examines patent, trademark, and copyright law to show how a variety of doctrines work together in each of these fields to establish what is in effect a system based on original acquisition. It points out ways in which the same core concerns first possession rules present in the realm of tangible property illuminate the approach to the award of IP rights. Part III steps back to engage in a more critical analysis, noting ways in which existing doctrine gets things right and others in which it does not. This Article concludes by considering the major themes that emerge from considering the original acquisition concept as it plays out in the domain of intellectual property, identifying lessons for both property and IP law.

I. FIRST POSSESSION: FORMS AND FUNCTIONS

First possession is a bedrock principle of property law. Property regimes have developed possessory claiming rules for the allocation of rights in all manner of resources, ranging quite literally from diamonds[35] to dung.[36] Yet despite a seemingly unitary doctrinal construct, important differences remain in the way possession rules operate in different contexts. The key variable is time. Imagine a chronology that begins with the first actions a person may take having any relationship to a resource, like simply becoming aware of its existence or forming an intent to use it. The timeline then proceeds through the various actions necessary for a person to derive a benefit from the resource: preparations for its pursuit; pursuit itself; the successful completion of pursuit by bringing the resource within one's control; cultivation and improvement to enable beneficial use; and finally actual use, enjoyment, consumption of the resource, or its transfer to another.

In theory, property law could have picked any point along this temporal continuum as the one at which property rights vest. In practice, property law essentially limited its choices to two. In some contexts, property law has deemed "possession" to be satisfied at a comparatively early point in time. Under this approach, possession occurs when a person has undertaken significant steps toward the resource's appropriation and use, even though actual control has not yet been achieved. This Articles calls this variant of first possession a "first-

[35] *See* Armory v. Delamirie (1722) 93 Eng. Rep. 664, 664 (KB).

[36] Haslem v. Lockwood, 37 Conn. 500, 500 (1871).

committed-searcher rule."[37] Alternatively, and more commonly, property law has deemed possession to be satisfied at a later point in time. Under this approach, possession occurs only after a person has obtained control over the resource. This Articles calls this variant of first possession a "rule of capture."[38] These are very much ideal types, but they roughly represent two notional points around which property law's first possession doctrines tend to coalesce.

The property canon offers clear illustrations of each approach. Consider *Pierson v. Post*,[39] a staple of first-year American property law curricula. The case involved a hunter, Post, who chased a wild fox for some period of time, only to lose the animal to a farmer, Pierson, who suddenly appeared on the scene and quickly killed it.[40] The hunter sued the farmer to recover the value of the animal's pelt, but the court sided with the farmer.[41] The dissent argued that it was enough to claim a wild animal if "the pursuer be within reach, or have a reasonable prospect . . . of taking" it.[42] In our terms, it advocated awarding the fox to the first committed searcher. The majority, however, rejected this course, holding that "pursuit alone vests no property or right in the huntsman."[43] In the majority's view, possession of wild animals required either "actual bodily seizure" or having otherwise "wounded, circumvented or ensnared them, so as to deprive them of their natural liberty, and subject them to the control of their pursuer."[44] The majority, in other words, held that first possession of foxes would be satisfied only by the rule of capture.

A similar distinction can also be seen in the practices described in Professor Robert Ellickson's seminal study of nineteenth century whalers.[45] The usual rule among whalers was analogous to the rule of capture adopted in *Pierson v. Post*: A whaler establishes possession only after successfully lancing a whale with a harpoon tethered and secured to the whaler's boat.[46] The whale, in other words, had to be brought under submission. This norm, known as the "fast-fish-loose-

[37] *See* LANDES & POSNER, *supra* note 22, at 17 (stating that property law gives "first committed searcher the exclusive right to conduct the search operation").

[38] *See* GOBLE & FREYFOGLE, *supra* note 16, at 98-99 (describing rule of capture based on historical development through allocation of rights over wildlife).

[39] 3 Cai. 175 (N.Y. Sup. Ct. 1805).

[40] *Id.* at 175.

[41] *Id.* at 177-80.

[42] *Id.* at 182 (Livingston, J., dissenting).

[43] *Id.* at 177 (majority opinion).

[44] *Id.* at 177-79.

[45] *See* Robert C. Ellickson, *A Hypothesis of Wealth-Maximizing Norms: Evidence from the Whaling Industry*, 5 J.L. ECON. & ORG. 83, 88-94 (1989) (discussing different property regime norms in whaling industry).

[46] *See id.* at 89-90 ("[The] rule was in practice likely to reward the first harpooner, who had performed the hardest part of the hunt, as opposed to free riders waiting in the wings."); *see also* HERMAN MELVILLE, MOBY-DICK 305-06 (First Avenue 2014) (1851).

fish" rule, reflects a rule of capture approach to first possession of whales. But some fisheries followed a first-committed-searcher approach. In waters inhabited by the more aggressive sperm whale, custom granted an exclusive claim to the first to lance a whale and mark its body with a harpoon, regardless of whether the harpoon remained connected to the whaler's vessel, so long as the whaler remained in active pursuit.[47] In other words, a whaler could acquire a claim to a whale at a stage prior to actual capture by making substantial progress toward capture and demonstrating a commitment to following through.[48] This norm, known as the "iron-holds-the-whale" rule, reflects a first-committed-searcher approach to the first possession of whales.[49]

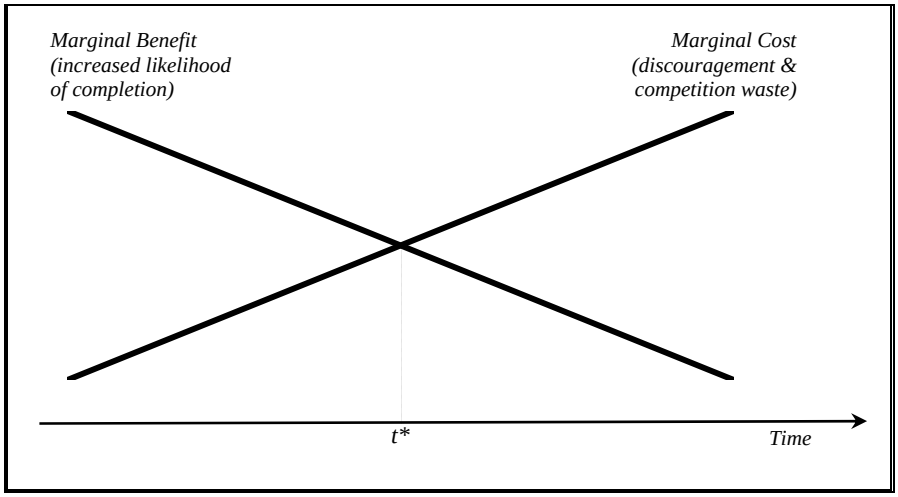
The cases dealing with first possession suggest a recurring set of competing practical considerations, some of which push for early awards of property rights and some which push for late awards. Ideally, property doctrine would take account of the relative strength of these considerations, which dictate the point in time—or equivalently, the standard of performance—that should count as satisfying the possession requirement with respect to a particular resource. Figure 1 below illustrates the marginal benefits and costs of pushing back the moment that is deemed to satisfy the possession requirement. Formally, the optimal time to deem possession as having been established is the point where the marginal benefit and marginal cost are equal. Differences in the way property law approaches first possession can be understood as reflecting how the balance between the relative pros and cons of early and late awards changes for different resources along the course of their acquisition.

[47] *See* Ellickson, *supra* note 45, at 90-92 (discussing "iron-holds-the-whale" property norm, which required affixment of harpoon to whale coupled with fresh pursuit).

[48] *See* Swift v. Gifford, 23 F. Cas. 558, 560 (D. Mass. 1872) ("[H]e who first strikes [the whale] so effectually that the iron remains fast should have the better right, the pursuit still continuing, it is reasonable, though merely conventional, and ought to be upheld.").

[49] *See* Ellickson, *supra* note 45, at 90-92. First-committed-searcher rules are frequently coupled with a requirement that the claimant eventually complete capture before a durable property right will be awarded. The primary role of the first-committed-searcher rule in these situations is to provide the priority rule used to resolve disputes between two otherwise valid claims, establishing the point in time used to resolve the contest between them.

Figure 1. Optimal Timing of Possession.[50]



Understanding this balance and the shift in equilibrium from one resource context to another depends on an analysis of the competing forces that push in favor of early and late awards. The magnitude of these concerns varies with changes in factors such as the characteristics of the resources at issue, the ways people desire to use them, the manner in which they are likely to be pursued, and the technologies available to the legal system.[51] But the core concerns that underlie this tradeoff are strikingly stable across the landscape of property law.[52]

The principal danger of awarding rights too early in the development process is the risk that they will go to someone who will fail to complete the proverbial

[50] The curves are drawn schematically and need not be straight lines. While in many cases it is reasonable to assume that the marginal benefit curve is downward sloping and that the marginal cost curve is upward sloping, other depictions can fit equally well without any significant change in the analysis. For example, the marginal cost curve may be flat. The only essential assumption for the argument about a reasonably administrable optimal timing for possession is that the marginal benefit curve initially lies above the marginal cost curve, and that they intersect just once. When these assumptions are violated, first possession may not be a suitable candidate for allocating property rights over previously unowned resources, which is consistent with alternative social mechanisms for resource management, such as common property or auctions. The discussion of such mechanisms is beyond the scope of this Article.

[51] *Cf.* Elinor Ostrom, *Private and Common Property Rights*, *in* 2 ENCYCLOPEDIA OF LAW AND ECONOMICS: CIVIL LAW AND ECONOMICS 332, 338 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000) (arguing that optimal strategy is to manage common property changes based on given resource's purpose of use, quantity, related technology, and other factors).

[52] *See infra* note 69 and accompanying text (noting importance of property right timing to optimize variety of resources).

chase, leaving the resource underused.[53] In such cases, it would have been better to allow the ownership race to continue. The problem is essentially one of misallocation. Awarding exclusive rights to a resource at an early stage when considerable work must still be done to put the resource to use involves the possibility that the resource will be awarded to someone who is not very good at—and possibly incapable of—carrying out the tasks that still remain.[54] Late awards can therefore be seen as a mechanism to identify the more capable, cost-effective searchers.

When a party receives an early award but fails to follow through, the right can sometimes be reallocated to a more capable party through voluntary exchange or, perhaps, via abandonment and a new contest for possession.[55] Such reallocations, however, will often be associated with transaction costs, which may be prohibitive or otherwise entail significant waste, such as delay in the use of the resource and search and negotiation costs associated with the reallocation process itself.[56] Further, early awards may incentivize those who are incapable of completing the chase but are able to take an early lead (deemed sufficient to obtain a property right) to nevertheless join the race and do so.[57] But their hope of profiting from such early lead may disincentivize more capable pursuers from joining in. Paying to get the entitlement from the less capable yet early pursuer would reduce their incentive to successfully complete the series of actions necessary to bring the resource into its ultimate use.

On the other side of the ledger, a system in which rights are awarded later—as under a rule of capture—presents two chief social costs. One is excessive and wasteful investment in resource search and pursuit.[58] Efforts expended by those

[53] *See supra* note 21 and accompanying text (discussing importance of timing when conferring property interests); *see also* Eric R. Claeys, *Exclusion and Exclusivity in* Gridlock, 53 ARIZ. L. REV. 9, 10 (2011) ("[W]hen too many individuals have the rights to exclude in relation to a resource, the resources may be *under*used.").

[54] *See* Lueck, *supra* note 32, at 394 (discussing critics who claim that early property awards granted in homesteading, oil and gas extraction, and patent process encourage suboptimal resource use and overexploitation).

[55] *See, e.g.*, Gary D. Libecap, *Assigning Property Rights in the Common Pool: Implications of the Prevalence of First-Possession Rules for ITQs in Fisheries*, 22 MARINE RESOURCES ECON. 407, 413 (2009) (noting that while first possession "rewards exploration and risk taking," later trade can "reallocate the resource to higher-valued users" and more efficient uses).

[56] *See id.* at 409.

[57] Terry L. Anderson & Peter J. Hill, *The Race for Property Rights*, 33 J.L. & ECON. 177, 183-84 (1990) (discussing this phenomenon in context of squatters and speculators in land-based property regimes).

[58] *See* Lueck, *supra* note 32, at 402 ("[L]aws that rely on first possession tend to define possession and grant ownership quite early to thwart wasteful investment."); *see also* Barzel, *supra* note 26, at 352 n.11 (suggesting that earlier grants of rights will prevent resources from being wasted in course of competition); Duffy, *supra* note 15, at 443-44 (noting preference

who set out to capture a resource but are beaten by someone else are often deadweight social loss, and to the extent later awards result in claimants having to do more work to receive rights, later awards will mean that ownership races may last longer and involve a greater number of participants and greater levels of wasteful duplication of effort.[59] The other, and related, problem with late awards concerns their incentive effects. Because those who unsuccessfully compete for a resource get nothing for their troubles, would-be competitors may be discouraged from entering the competition in the first place.[60] The greater their troubles—i.e., the larger the investment in time, labor, and money they must make to obtain the resource—the greater the discouragement.[61]

Given the wasteful duplication problem, this could be a good thing, up to a point: fear of losing might reduce the number of competitors and therefore the amount of wasted investment.[62] But it would be the rare case that these two factors would be perfectly offsetting.

In many cases, late awards will not have these two offsetting effects on entry simultaneously, as the two often arise in different settings. Excessive entry that leads to wasteful, duplicative effort and rent dissipation is likely to arise in settings where participants are reasonably assured that the per-participant expected value of joining the race are greater than or equal to the cost of participating.[63] Good examples are the fishery,[64] a grazing commons, and

for granting property rights early can avoid wasteful duplications of effort); Aditya Bamzai, Comment, *The Wasteful Duplication Thesis in Natural Monopoly Regulation*, 71 U. CHI. L. REV. 1525, 1525 (2004).

[59] Peter S. Menell & Suzanne Scotchmer, *Intellectual Property Law*, *in* 2 HANDBOOK OF LAW AND ECONOMICS 1475, 1489 (A.M. Polinsky & S. Shavell eds., 2007).

[60] Steve P. Calandrillo, *An Economic Analysis of Property Rights in Information: Justifications and Problems of Exclusive Rights, Incentives to Generate Information, and the Alternative of a Government-Run Reward System*, 9 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 301, 307 n.17 (1998) ("However, we must not lose sight of the wasted effort put forth by the loser of the race, which is a social loss that is usually unrecoverable. The reward system would not solve this dilemma, but the existence of the problem militates towards a scheme in which the beneficiary of the reward should be recognized early on . . . .").

[61] This concern extends more broadly than the concern about wasteful duplication of effort. If a competitor is able to capitalize on a would-be claimant's contributions, there is no social waste as such, but there is a private loss when the claimant is unable to recoup her costs. The disincentive to participation this creates can thus result in what is ultimately a social loss.

[62] *Cf.* Lueck, *supra* note 32, at 399-400 (suggesting heterogeneity among claimants may reduce wasteful competition by discouraging entry).

[63] Richard S. Higgins, William F. Shughart II & Robert G. Tollison, *Free Entry and Efficient Rent Seeking: Efficient Rents 2*, 46 PUB. CHOICE 247, 255 (1985) ("[W]hen there are no restrictions on the number of individuals who may vie for the right to capture . . . entry will occur, and resources will be spent up to the point where the expected net value of the transfer is zero.").

[64] For a classical treatment of one such case, see H. Scott Gordon, *The Economic Theory of Common-Property Resource: The Fishery*, 62 J. POL. ECON. 124, 130-31 (1954)

multiple-party drilling into a common oil reservoir. To illustrate, imagine an open fishery governed by the rule of capture. Assume that the per-day costs and benefits, as a function of the number of fishermen, are as follows:

Table 1. The Fishery: Public and Private Costs and Yield as a Function of the Number of Fishermen (in Dollars).

Fishermen	Total Cost	Total Expected Yield	Net Expected Social Value	Net Expected Profit per Fisherman
0	0	0	0	0
1	10	16	6	6
2	20	29	9	4.5
3	30	40	10	3.33
4	40	49	9	2.25
5	50	56	6	1.2
6	60	61	1	0.16
7	70	64	(-6)	(-0.85)

The first column in Table 1 simply designates different numbers of fishermen that may operate on the fishery. The second column reflects the assumption that operating a boat on the fishery costs ten dollars, such that the total social cost of fishing is ten times the number of fishermen. The third column reflects an assumption of diminishing marginal returns per unit of effort, a general phenomenon observed in the world. Here, this assumption can be motivated by the realization that fishery congestion reduces the fishery's yield.[65] The fourth column is simply the difference between the third and the second columns. The last column divides the fourth column by the first to obtain the per fisherman net expected return.

As Table 1 suggests, it would be socially optimal that only three fishermen operate on the fishery, which would maximize the fourth column, "Net Expected Social Value." However, since all are free to join the fishing race, as many as six fishermen would enter, because the expected private return to entry would still be positive (see the last column). Though such entry would be privately beneficial, it is excessive from a social point of view because it decreases the net social value of the fishery. Each of the fourth, fifth, and sixth entrants increases

(suggesting that, on common properties with free entry, number of entrants would be excessive, tending to dissipate value of the resource). A similar scenario applies for an oil field that lies beneath land parcels owned by many owners, from which each could drill and extract oil.

[65] The diminishing returns assumption can be motivated easily respecting the fishery. Doubling the number of boats on the fishery from one to two, say, will not likely result in double yield because of friction between the two fishermen: sometimes one would catch a fish that the other would have caught had it been alone on the fishery, or because they would get in each other's way occasionally and slow down.

social costs by ten dollars, but increases social value by an amount lesser than ten. In essence, each fisherman joining the fishery disregards the negative externality it imposes on others. For our purposes, an implicit assumption supports the conclusion of excessive entry, which is that fish are many, that a fishing day involves the fishing of many fish, and that all fishermen are similarly situated and can observe the number of fishermen on the fishery. In such cases, each fishermen knows, virtually with certainty, that she will cover her costs and will not operate at a loss.

Things are different in a scenario where race participants are not assured of recouping their participation costs with reasonable certainty. Such is characteristically the case when there is one prize, allocated to one winner at the end of a relatively costly and prolonged pursuit. Take, for instance, a potential company pursuing a pharmaceutical patent where the expected revenue—if the chase is successful—is $1.5 billion, but where research and development ("R&D") is expected to last five years and cost $1 billion. Patents are awarded under a rule of capture to the first to complete R&D. Firms cannot know how many others are participating in the R&D race. If firms believe that there's a significant chance that a rival might get the patent before they do, the firms may be reluctant to begin R&D, fearing a worst case scenario where they may invest nearly the full one billion dollars only to discover that a rival filed for a patent before they did. In contrast to the first scenario, a participant in this race cannot be assured to cover costs (i.e., there is a greater risk involved), and does not know exactly how many others are already in the race (so she might join a race with a negative expected value).

Later awards may further deter entry in cases where a claimant can free-ride on the investments of others who have accomplished earlier steps that enable capture.[66] While free-riding avoids duplication of effort, it can lead to especially sharp disincentive effects to the extent it weakens the correspondence between the size of investment and the likelihood of winning the competition.[67] If ownership is assigned to someone who merely delivers the *coup de grâce*, others will be reluctant to undertake costlier or more difficult parts of the hunt that make the ultimate kill possible.

The downward sloping curve in Figure 1 represents the marginal benefit of delaying the moment that the law regards as possession in the chronology of a resource's pursuit. The curve is positive, indicating that there is always some benefit to delaying the award of rights. The further along in the chronology of the chase the pursuer is, the greater the probability that she will complete it

[66] *See, e.g.*, Lemley, *supra* note 30, at 1039-40 ("The professed fear is that property owners won't invest sufficient resources in their property if others can free ride on that investment.").

[67] Jerome H. Reichman, *How Trade Secrecy Law Generates a Natural Semicommons of Innovative Know-How*, *in* THE LAW AND THEORY OF TRADE SECRECY: A HANDBOOK OF CONTEMPORARY RESEARCH 185, 196 (Rochell C. Dreyfuss, Katherine J. Strandburg & Edward Elgar eds., 2011) (noting that free riding by competitors creates disincentives to invest in innovation in the first place).

successfully. Gains represented by increases in the probability of success often accrue at a decreasing rate, however.

To illustrate, imagine a hunter chasing a fox in a dense forest. Assume that the hunter is moving at twenty feet per second and the fox at ten feet per second, and that the probability that the hunter will catch the fox is a decreasing linear function of the area that the hunter needs to scout in search of the fox. If the hunter spots the fox from one hundred feet away, by the time she reaches the place she saw it, the fox could be hiding anywhere in a circle with an area of roughly $2{,}500\pi$ square feet ($\pi*50^2$), because the fox could have traveled fifty feet in any direction during that time. By the same logic, if the sighting were from eighty feet away, the fox would have to be searched for in an area of $1{,}600\pi$ square feet, and if it were seen from sixty feet away, the search area would be 900π square feet. The first twenty foot movement reduced the search area by 900π square feet (from $2{,}500\pi$ to $1{,}600\pi$), the next twenty foot movement toward the fox reduced that area by only 700π square feet (from $1{,}600\pi$ to 900π). So while the benefits of progressing in the race toward the fox remain positive, they accrue at a decreasing rate.

The upward sloping curve in Figure 1, meanwhile, represents the marginal cost of delaying the moment defined as possession. Again, this curve is positive because there is a cost to prolonging the race—racers will incur duplicative and wasteful costs throughout the relevant timeframe. It is drawn as upward sloping because longer races may be more costly per unit of time: longer hunting races, for example, generally require the participants to carry more equipment and provisions. Moreover, races that last longer may allow more parties to join. The likelihood of either wasteful duplication of effort or depressed participation resulting in underdevelopment can therefore be expected to increase with time.[68]

A few further comments about the relationship between time and resource waste are in order. The literature on possession has given considerable attention to issues of wasteful competition associated with possession-based regimes, with a special emphasis on timing issues.[69] Any rule for claiming resources has

[68] While Figure 1 depicts what we believe are the most likely shapes of the marginal cost and benefit curves associated with ownership races, these shapes are not essential. For example, our analysis applies equally well to races characterized by a fixed marginal cost. In that case, the marginal cost curve would be flat, and nothing in the analysis would change materially. The optimal time of possession would still be determined by the intersection of the two curves, and a relatively high fixed marginal cost would suggest that possession should be awarded earlier in time during the race compared to an alternative of a lower fixed marginal cost. *See supra* note 50.

[69] *See, e.g.*, Anderson & Hill, *supra* note 57, at 177 ("Economics literature on the evolution of property rights has increasingly emphasized the optimal timing for establishing those rights."); Richard A. Epstein, *Past and Future: The Temporal Dimension of the Law of Property*, 64 WASH. U. L.Q. 667, 670 (1986) ("Time offers a unique measuring rod, sufficient in principle to resolve two or two thousand competing claims for priority."); David D. Haddock, *First Possession Versus Optimal Timing: Limiting the Dissipation of Economic*

the potential to distort people's behavior because in theory, a rational claimant should be willing to spend up to the expected value of a given resource itself in order to obtain it.[70] Unless there is social value in the actions that the law requires a person to take to establish a claim to a resource that is at least equal to the value of the resource to a claimant, the rule will lead to excessive claiming and deadweight loss (including the value of establishing ownership). It might not be the end of the world to have to queue up the night before to get tickets to a rock concert, for example, but on the whole, the queuing process itself wastes people's time and is justifiable only if there is no better way to distribute tickets. In this last case, an auction rather than a first possession based queue might be the better allocation mechanism.[71]

Early awards under a first-committed-searcher rule present a special problem in this regard. The genius of anchoring the award of rights in possession is that they can avoid the sort of waste that a claiming protocol might otherwise generate because they require claimants to perform a task that is itself necessary for the resource to be used. A rule awarding ownership of a parcel of farmland to the best dressed person at City Hall next Tuesday creates incentives to engage in otherwise pointless behavior—showing up at City Hall in fancy clothes on Tuesday. By contrast, a rule awarding ownership of the land to the person who begins the process of cultivating it only encourages a claimant to do something she would have done anyway to enjoy the property. It is effectively costless.[72] This singular advantage of reliance on possession is less likely to hold true, however, to the extent possession rules adhere to a first-committed-searcher model. Since first-committed searcher-rules identify steps that are more preliminary in the overall process of putting a resource to use, there is a greater risk that those steps are not actually optimal, or even necessary, to the resource's ultimate development.[73] So, for example, one problem with awarding possession

Value, 64 WASH. U. L.Q. 775, 783 (1986) ("Timing is also a concern when modeling innovation and the sometimes valuable patents and copyrights that follow."); Lueck, *supra* note 32, at 398 ("Maximizing resource value is, in effect, a problem of optimally timing the establishment of rights . . . ."); Ronen Perry & Tal Z. Zarsky, *Queues in Law*, 99 IOWA L. REV. 1595, 1629 (2014) (suggesting that allocation of "specific assets at a relatively early stage, when claimant heterogeneity is still large" can partly resolve issue of wasteful races and duplicative investments).

[70] The value of the resource would be discounted by the probability of being unsuccessful in claiming it.

[71] *See supra* note 50.

[72] There may be costs and distortions, however, to the extent the action constituting possession does not facilitate a particular use, or worse, is actually incompatible with that use. Animal conservation, for instance, is at odds with a rule requiring mortal wounding, and an interest in confidentiality of an expressive work would conflict with a rule requiring publication.

[73] *See* Claeys, *supra* note 53, at 10 (noting that early award of property rights can lead to underutilization of resources).

of the fox in *Pierson v. Post* to the first person to saddle up and mount a horse is that it might not actually be necessary to use a horse to catch the fox—as farmer Pierson showed.

Even when possession rules are perfectly designed, there is still the potential for distortion, however, insofar as they center on *first* possession and therefore reward not just the ability to take possession but to do so faster than anyone else. Awarding a pot of gold to the first person across the finish line creates identical incentives to invest in training, whether the race itself is a one-hundred-meter sprint or a marathon. The sprinter will train just as hard as the marathoner to win the race, even though the amount of energy needed to move a human body 26.2 miles is much greater than the amount needed to move it one hundred meters. And unlike possession itself, *faster* possession is not necessarily essential to the optimal use of the resource.[74] For this reason, first-committed-searcher rules may have some value to the extent they do not require as much work to be completed before ownership is awarded. How much this is true is uncertain, however. If instead of doing more to develop a resource, claimants direct their energies to qualify as first-committed searchers faster, early awards may face the same problem of inefficient racing for resources.[75] In addition, faster claiming and faster resource development may often be valuable in and of itself and also generate positive external benefits—particularly for intellectual property.[76] Concerns about wasteful racing may therefore be less pressing than they are sometimes made out to be.[77] It should also be noted that, apart from investments in speed, competition can generate social waste by encouraging behavior intended to tilt the competitive field—theft and fencing, espionage and secrecy, sabotage and conflict.[78] To the extent later awards translate to more protracted competition, they present a greater danger of social cost through such anti-competitive conduct.

Figure 2 sets out the central concerns in the design of rules for awarding property rights. The costs identified are relative: in most cases, the drawbacks that are listed can occur at some level with either late or early awards, but they

[74] *See* Lueck, *supra* note 32, at 399 (noting that "rush" of competitors can lead to early grant of possession that is neither socially optimal nor valuable).

[75] *See* Donald G. McFetridge & Douglas A. Smith, *Patents, Prospects, and Economic Surplus: A Comment*, 23 J.L. & ECON. 197, 201 (1980) (noting negative effects when possession rights go to "first rather than the best" claimant).

[76] *See* Douglas W. Allen, *Homesteading and Property Rights; or, "How the West Was Really Won,"* 34 J.L. & ECON. 1, 1-6 (1991) (arguing that incentives for faster settlement created by 19th century homesteading policies reduced enforcement costs and helped secure U.S. government claims to western land).

[77] *See* Duffy, *supra* note 15, at 467-68 (noting that inefficiencies of racing in intellectual property are not significant).

[78] *See* ROBERT D. ATKINSON & STEPHEN J. EZELL, INNOVATION ECONOMICS: THE RACE FOR GLOBAL ADVANTAGE 190 (2012) ("[T]he race for global innovation advantage creates both global opportunities and threats, because countries can implement their innovation policies in ways that are either 'good,' 'bad,' or 'ugly.'").

are thought to be comparatively more serious with one model than with the other. At least within the context of intellectual property, failure to follow through is generally the most significant danger associated with early awards—especially where early awards result in rights that are broader than anything the claimant could possibly develop—while disincentives to compete and wasteful duplication are generally the most significant drawback of late ones.

Figure 2. Early vs. Late Awards.

Costs of Early Awards (*First Committed Searcher*)	**Costs of Late Awards** (*Actual Capture*)
▪ **Deadweight loss from misallocation to less capable/incapable claimants** ▫ Resource underuse/non-use ▫ Transaction and reassignment costs ▪ **Wasteful claiming conduct** ▫ Inefficient racing to begin search ▫ Unnecessary search behavior ▪ **Slower capture/completion** (when faster development desired) ▪ **Greater uncertainty as to resource boundaries and characteristics** ▪ **Often an ambiguous standard that requires discretion in application (e.g., as to what "committed" means)**	▪ **Disincentives to compete from risk of lost investment, especially with free-riding** ▪ **Wasteful duplication of effort** ▪ **Wasteful claiming conduct** ▫ Inefficient racing to capture ▫ Inefficient capture rates (e.g., endangered species) ▪ **Where rights are time-limited, longer effective exclusivity period** ▪ **Other competitive waste** ▫ Self-help, fencing, secrecy ▫ Theft and espionage ▫ Interfering capture activities ▫ Sabotage, conflict, violence

The basic trade-off discussed above and depicted in Figures 1 and 2 has been idealized and simplified in our discussion so far. In practice, administrability concerns are a third variable that is often critical.[79] In Figure 1, the proper point in time to award property rights would in theory be time *t**—the exact point in the possession continuum where the marginal benefit of delay just equals its cost. For a number of reasons, however, the meaning of possession in various contexts will also be shaped by practical demands like the need for clear rules, intuitive concepts, and notice to race participants. To avoid wasteful duplication of effort and lost investments, for instance, it is important for would-be

[79] Michael W. Carroll, *One Size Does Not Fit All: A Framework for Tailoring Intellectual Property Rights*, 70 OHIO ST. L.J. 1363, 1424-30 (2009) (discussing importance of administrability when creating effective IP regime).

competitors to be able to observe and understand what counts as possession fairly easily so that, e.g., they know not to continue expending efforts to win a race that has already ended.[80] It does not do much good to end the race early (i.e., declare a winner and stop the simultaneous search effort) if the other participants do not know it is over. A clear test for possession also helps forestall conflict among would-be competitors, encourages investment and facilitates exchange by providing security of holdings, and reduces the costs of administering and policing a property system.[81] While the need for clear and intuitive tests for possession does not intrinsically align with either early or late awards, in practice it tended to skew in favor of later awards at common law because actual capture is often, though not always, more unambiguous than a committed search.

The technology of the hunt determines what points in its chronology can even be considered as viable candidates for possession from the perspective of providing notice. In the context of hunting foxes, for example, it seems that such informational considerations push for the rule of capture. What earlier stage in the hunt could be set as the standard for a first-committed searcher? A certain distance from the fox? A wound? If so, what type of wound confers property rights (a scratch or mortal wounds)? What are the chances that other hunters would be able to see both the hunter and the fox and determine the distance between them in a dense forest? In the context of whaling, by contrast, the act of sinking a harpoon into the body of the whale in the open sea by a party in hot pursuit is a clear—or at least much clearer—informational marker to third parties, and makes the first-committed-searcher rule a much more viable candidate. The administrability concern adds to those discussed previously, and can push the timing of grants of exclusive rights to either earlier or later points in time.

To return to the example of Ellickson's whalers cited earlier,[82] the trade-offs embodied in the choice between first-committed-searcher and actual capture models are evident in both the features that were universal among whaling norms across all whaling fisheries and the ways in which those norms differed. As Ellickson notes, no group of whalers adopted a rule awarding exclusive rights in a whale to the first crew to lower a boat in pursuit.[83] That would be too soon. Why? It would create too great a risk of awarding the prize to someone less

[80] *Cf.* Kitch, *supra* note 27, at 278 (arguing that patents act as signaling devices to competing firms to reduce amount of duplicative investment in innovation).

[81] Joseph William Singer, *The Rule of Reason in Property Law*, 46 U.C. DAVIS L. REV. 1369, 1376 (2013) (noting that clear property regime "allows actors to invest in reliance on clear rules of the game, avoids unfair surprise, controls the arbitrary discretion of judges, and promotes equality before the law by treating like cases alike").

[82] *See supra* notes 45-49 and accompanying text (discussing Robert Ellickson's seminal study of nineteenth century whalers).

[83] *See* Ellickson, *supra* note 45, at 88 n.14, 95 (noting that certain norms, including "first boat in the water" were not observed in whaling industry).

capable of completing the task of capture, it would create incentives to get boats in the water earlier than would be optimal, and it would not send a clear signal as to which whale the whaler intended to pursue. At the other end of the spectrum, neither did any of the whaling communities wait until a whale was actually killed to assign claims to the animal. Among other difficulties, such a rule would risk rewarding free-riders seeking to benefit from the significant efforts others had already made to subdue a whale. Rather, both rules—iron-holds-the-whale (first-committed searcher) and fast-fish-loose-fish (rule of capture)—pick points that are in between.

The same concerns also help account for the way norms among whalers differed in different contexts. Sperm whales tend to be relatively fast swimmers and vigorous fighters,[84] prone to diving when harpooned, which often made it necessary for the fishermen to cut the line lest their ship sink. Their hunt involved costly and prolonged chases—over days—during which the whale would be tired out. Waiting until a sperm whale had been brought under actual control before giving a whaler a claim to the animal risked failing to reward those whose early efforts made later capture possible—the free-riding problem. The iron-holds-the-whale rule therefore seems to have been adapted to conditions presented in sperm whale fisheries.[85] The right whales predominant elsewhere, by contrast, were comparatively slow swimmers with docile temperaments.[86] There was little need to award possession sooner, and waiting until the whale had been brought under actual control ensured that the whale went to the person who had "performed the hardest part of the hunt."[87]

To summarize: the primary problem with early awards is the risk that a claimant will fail to proceed successfully with development of a resource after being awarded it. The primary problems with late awards are the potential for prolonging costly multiparty races and disincentivizing race participation when participation is time-consuming and costly. Determining the moment of possession should be made in light of the ability to convey clear notice to race participants as to the moment in which a resource is taken into possession. Those considerations play out differently for different resources.

II. ORIGINAL ACQUISITION IN INTELLECTUAL PROPERTY

The concept of possession might not seem like it has much to do with intellectual property. Possession has a certain physical flavor,[88] and the resources IP law governs are intangible by definition. A human being cannot

[84] *See id.* at 425 (discussing nature of sperm whales).

[85] *See id.*

[86] *Id.*

[87] *Id.* at 89.

[88] *See* OLIVER WENDELL HOLMES, JR., THE COMMON LAW 216 (Little, Brown & Co. 1945) (1881) ("To gain possession, then, a man must stand in a certain physical relation to the object and to the rest of the world . . . .").

literally reach out and grab an idea, much less skewer it with a harpoon. As one venerable eighteenth-century jurist put it, "But how is possession to be taken, or any act of occupancy to be asserted, on mere intellectual ideas? . . . All writers agree that no act of occupancy can be asserted on a bare idea of the mind."[89]

Yet the concept of possession can be extended to apply to intellectual creations without conceptual or linguistic violence. We certainly speak of possessing intangibles, like a sense of humor[90] or a secret.[91] Indeed, IP doctrines occasionally invoke the concept of possession explicitly, most obviously in the case of patent law's "written description" requirement.[92] Just like "property" serves as an imperfect analogy to "intellectual property," so does "first possession" to "original acquisition of intellectual property."

The concept of possession, as property law has traditionally conceived it, is oriented around the notion of control, a state of affairs that brings a person substantially closer to being able to put a resource to use.[93] Although the various doctrines governing the award of IP rights for the most part avoid the language of possession, the basic concept of possession carries over to intellectual property and the model of first possession developed in property law can be usefully extended to major segments of IP law. This Articles stresses that there is no single first possession doctrine in these fields. Multiple interacting doctrines and concepts that together function as a system of original acquisition govern the award of rights.[94]

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[89] Millar v. Taylor (1769) 98 Eng. Rep. 201, 231 (KB) (Yates, J., dissenting).; *see also* Wheaton v. Peters, 33 U.S. (8 Pet.) 591, 669 (1834) (Thompson, J., dissenting) (discussing Justice Yate's dissent in *Millar*).

[90] *See, e.g.*, David E. Engdahl, *John Marshall's "Jeffersonian" Concept of Judicial Review*, 42 DUKE L.J. 279, 329 (1992) (stating that Chief Justice John Marshall "possessed a self-effacing charm and good humor").

[91] *See, e.g.*, ELIZABETH A. ROWE & SHARON K. SANDEEN, CASES AND MATERIALS ON TRADE SECRET LAW 14-17 (2012) (noting that for over a century and a half since founding, trade secrecy law in the United States developed primarily through common law adjudication).

[92] A patent specification must "demonstrate that the patentee was in possession of the invention that is claimed." Capon v. Eshhar, 418 F.3d 1349, 1357 (Fed. Cir. 2005). Further, a patent filing must "put the public in possession of what the party claims as his own invention." Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 924 (Fed. Cir. 2004) (quoting Evans v. Eaton, 20 U.S. (7 Wheat.) 356, 433-34 (1822)). If a prior disclosure of the invention was sufficient to place the invention "in the possession of the public," however, no patent can issue. Eli Lilly & Co. v. Zenith Goldline Pharm., Inc., 471 F.3d 1369, 1375 (Fed. Cir. 2006).

[93] *See* Pierson v. Post, 3 Cai. 175, 178 (N.Y. Sup. Ct. 1805) (requiring acts that bring animal within person's "certain control" before that person can be said to be in possession of it).

[94] Indeed, patent law's written description requirement, which refers to possession by name, plays a relatively peripheral role in the larger set of issues we are concerned with and is not a major focus of this Article's analysis.

Conceptually speaking, first possession has several basic hallmarks. It is, of course, a device that establishes when property rights begin and the identity of the first person to hold them.[95] It is, moreover, a relatively decentralized mechanism for doing so: initial ownership depends on the performance of some sort of act by the first owner that, in principle, does not require any direct involvement with a governmental authority.[96] Perfection of rights can be made contingent on registration with or verification by some government body that the requisite action has been performed—i.e., that the claimant has taken possession—but the act of taking possession is itself undertaken by private actors at their own initiative.[97]

In terms of its more specific content, first possession is a system based on temporal priority—the first person to do something wins. Others who carry out the necessary steps are precluded if someone else did so before them. As for the possession element, it entails more than mere desire or plotting and less than ultimate consumption, or even the completion of every task necessary for consumption to occur.[98] Possession is oriented around the notion of practical control, in which the would-be owner stands in a special relationship to the resource and changes its character in a manner consistent with its eventual use and consumption.[99] In what follows, this Article reviews a number of patent, trademark, and copyright doctrines which together align with this set of features.

Original acquisition rules play two related yet analytically distinct roles. First, these rules determine winners and losers in priority disputes among competitors who are racing simultaneously to own the same resource.[100] This may be thought of as the "first" part of "first possession." While this context generally parallels the discussion of common law priority contests featured prominently in *Pierson v. Post*, intellectual property brings its own quirks.

Second, original acquisition rules also determine the point in time—and equivalently the standard of performance—at which entitlements vest,

[95] *See, e.g.*, Lueck, *supra* note 32, at 425 (describing how first possession-based whaling customs made it clear who had valid claim to whale and when).

[96] Rose, *supra* note 5, at 76 ("Possession thus means a clear act, whereby all the world understands that the pursuer has 'an unequivocal intention of appropriating the [property] to his individual use.'" (quoting *Pierson*, 3 Cai. at 178)).

[97] John L. McCormack, *Torrens and Recording: Land Title Assurance in the Computer Age*, 18 WM. MITCHELL L. REV. 61, 67 (1992) (noting that recording land deed with the government is way to perfect ownership, but is not required to have valid legal claim to property).

[98] Detroit Edison Co. v. Mich. Air Pollution Control Comm'n, 423 N.W.2d 306, 310 (Mich. Ct. App. 1998) ("To constitute a protectable right, a person must have more than an abstract need, desire or unilateral expectation of the right.").

[99] Nicole L. Johnson, *Property Without Possession*, 24 YALE J. ON REG. 205, 223 (2007) (noting that right to surface water, for instance, is partly determined by the extent the owner puts resource to "beneficial use").

[100] *See, e.g.*, *Pierson*, 3 Cai. at 175.

irrespective of the existence of a priority contest.[101] This may be thought of as the "possession" part of "first possession." This can often take the form of a determination about what it is that can be possessed and become the subject of property rights. This function is more pronounced in intellectual property: while the nature of a fox is unchanged whether it is owned under either a first-committed-searcher rule or a rule of capture, in intellectual property, the thing owned often differs with the rule of original acquisition. Since the would-be owner often creates and perfects the thing to be owned, a later time of acquisition practically means that intellectual creations (or ideas) at an earlier stage of development are not subject to ownership. This function of original acquisition rules implicates questions about both the acquisition of any rights whatsoever as well as the scope of protection in cases where some rights have clearly been acquired.

These two functions are intimately connected. Whether a claimant has performed the action necessary to acquire exclusive rights will very frequently dispose of any priority questions. The two issues can be disaggregated, however, and the discussion that follows examines them separately, at least in part. Questions of what might be thought of as pure priority, involving conflicting claims by multiple actors for the very same resource are discussed under the heading of "priority." Questions that center more squarely on the standard for protection itself are discussed in terms of "protectability." The partial separation in the analysis grows out of a recognition that protectability questions are more pronounced for intellectual property than for physical resources. Nevertheless, it should be remembered that there is a great deal of overlap between the two aspects of claiming by possession and the division should be understood only as differences in emphasis and not as establishing mutually exclusive categories of doctrine.

A. *Patent*

Priority. The process of invention can be broken down into a series of mental and physical steps beginning with conception of the core inventive idea—what is often imagined as the "Eureka!" moment[102]—and ending with what patent lawyers call "reduction to practice," which can be accomplished by assembling a working version of the invention or by filing a valid patent application that

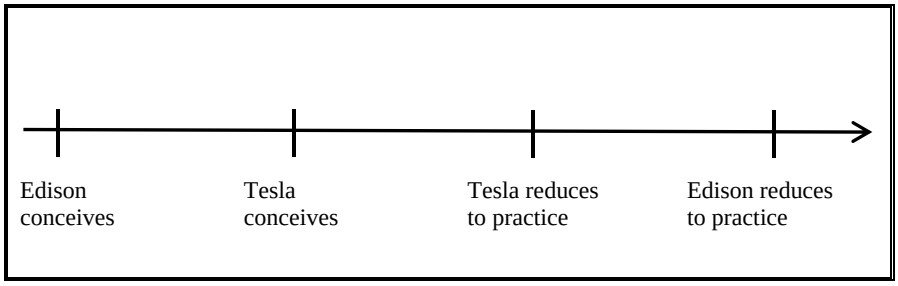
[101] *See, e.g.*, Lueck, *supra* note 32, at 425 (describing customary standards of performance required to establish valid claim to whale); *see also supra* notes 45-49 and accompanying text (discussing Ellickson's seminal study of nineteenth century whalers).

[102] Or perhaps, "hmm, that's funny . . . ." *See* CRAIG C. LUNDBERG & CHERI A. YOUNG, FOUNDATIONS FOR INQUIRY: CHOICES AND TRADE-OFFS IN THE ORGANIZATIONAL SCIENCES 378 (2005); JESSICA SILBEY, THE EUREKA MYTH: CREATORS, INNOVATORS, AND EVERYDAY INTELLECTUAL PROPERTY 25-26 (2015) (discussing role of "Eureka" moment in process of innovation and law's treatment of "Eureka" moment).

teaches others how to do so.[103] For our purposes, the process is analogous to the hunt of wild animals like foxes and whales, which similarly goes through stages of inspiration, pursuit, capture, and use.[104] Patent law decides between rival claimants to inventive technologies by identifying the first person to reach a certain stage on this developmental timeline, and in this way it can be mapped onto the general model of first possession that describes common law property. Even more so than with tangible goods, reliance upon first possession in the IP context raises questions about how to model possession.

The two basic approaches to first possession we have discussed—first-committed searcher and actual capture—produce the same result when the same actor is first to both begin and complete the hunt. But often this does not occur, and when it does not, the two rules come apart. Suppose, for example, that Edison has an idea for a particular invention before Tesla, a lightbulb let's say. But Tesla is nevertheless the first to complete the intellectual hunt, building an actual working version of the idea. In the language of patent law, Edison was the first to conceive the invention but Tesla was the first to reduce it to practice. Such a fact pattern is depicted in the timeline in Figure 3.

Figure 3. Priority Disputes.



In U.S. patent law from the start of the republic and for more than two centuries thereafter, this sort of invention race was governed by what was in effect a first-committed-searcher rule. Even today, for patent applications filed

[103] *See* Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1376 (Fed. Cir. 1986) (requiring inventor to reduce conception to practice, which "requires that the claimed invention work for its intended purpose"); Brunswick Corp. v. United States, 34 Fed. Cl. 532, 583-84 (1995) (noting importance of timing of reducing conception to practice).

[104] Conception requires more than simply a general idea of how to proceed. *See* Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1228 (Fed. Cir. 1994) ("Conception is complete only when the idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation.").

before March 16, 2013,[105] the patent would be awarded to whomever was first to conceive of the invention provided that party exercised "reasonable diligence" in reducing the invention to practice.[106] Under this regime, Edison would receive the patent, so long as he remained in diligent pursuit of the ultimate working invention. Such priority disputes were adjudicated through quasi-judicial "interference proceedings" before the Board of Patent Appeals and Interferences. This so-called first-to-invent priority rule is a clear patent law analog to the first-committed-searcher model of first possession.

The first-to-invent rule was abandoned following enactment of the Leahy-Smith America Invents Act ("AIA") in 2011, the most comprehensive overhaul of U.S. patent law in at least half a century.[107] Its most prominent change was to replace the first-to-invent rule with a first-to-file system, or more precisely, a system that awards patents to the first person to disclose their invention to the public, whether by filing a patent application or through other public acts.[108] The AIA thus pushes back the temporal lynchpin from the beginning of the inventive process to its end.[109]

The upshot of this new rule is that even if someone sets out in pursuit of an invention before the competition and is thus the first committed inventor, the race goes on and may very well be won by another who manages to complete the process first. Under the AIA, the patent in the situation described in Figure

[105] *See* Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 146(1)(n), 125 Stat. 284, 293 (2011) (codified as amended in scattered sections of 35 U.S.C.).

[106] *See* 35 U.S.C. § 102(g) (2012), (supplanted by Leahy-Smith America Invents Act in 2011); Griffith v. Kanamaru, 816 F.2d 624, 625-29 (Fed. Cir. 1987) (applying first to invent priority rules).

[107] Pub. L. No. 112-29, 125 Stat. 284 (2011) (codified as amended in scattered sections of 35 U.S.C.); Joe Matal, *A Guide to the Legislative History of the America Invents Act: Part I of II*, 21 FED. CIR. B.J. 435, 435 (2012) (stating that the AIA "arguably makes the most substantial changes to the law since those imposed by the Patent Act of 1836").

[108] Still more precisely, the AIA awards patents to the first to invent and then either file or publicly disclose, whether by written description, commercial sale, or acts otherwise making the technology available to the public. *See* 35 U.S.C. § 102 (stating that patent exists if invention is "patented, described in a printed publication, or in public use, on sale, or otherwise available to the public"). While forms of public disclosure other than filing can be used to establish priority, filing an application and the issuance of a patent by the U.S. Patent and Trademark Office ("USPTO") is still required for any patent rights to be awarded.

[109] Technically, exclusive rights vest upon the filing of a valid patent application (considered "constructive reduction to practice"). *See* U.S. DEP'T OF COMMERCE, U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 2138.05(I) (2014). Alternatively, rights vest upon the publishing of an "enabling" disclosure, followed by timely filing within twelve months; an enabling disclosure is one that allows those skilled in the relevant art to make the invention without "undue experimentation." *See id.* § 2164. On the relationship between invention-based rights and filing, see Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 CORNELL L. REV. 953, 995-97 (2007).

3 would now go to Tesla rather than Edison because Tesla was the first to file a valid application.[110] The AIA, in other words, can be seen as moving the U.S. patent system from a first-committed-searcher model to one representing a rule of capture.

Protectability. The possessory timeline also speaks to the nature of what can be patented at all, even in the absence of a priority dispute. At a very basic level, the answer is that a patent must be issued by the U.S. Patent and Trademark Office ("USPTO")—something that was true even before the AIA was enacted—and this in turn requires actual or constructive reduction to practice. But the choice described above between a first committed inventor and an actual capture approach can be illuminated further by situating it within a still-broader chronology. That chronology begins with the discovery of basic scientific truths, mathematical axioms, and other abstract principles; it proceeds through applied research either to find real-world uses for such knowledge or to apply such knowledge to solve known problems; it continues to the actual invention of a device or process having some practical and beneficial use; from there it proceeds to the perfection of the invention to generate a commercially desirable product; from there to production and marketing; and then it concludes with the sale or use of the invention and the enjoyment of whatever benefits it provides. Both the pre- and post-AIA regimes allow inventors to receive exclusive rights at points some distance removed from either end of that larger timeline.[111]

One of the fundamental preconditions to patentability under U.S. patent law is that an invention be "useful," a principle known as the utility requirement.[112] Patent law could adopt a rule allowing the award of exclusive rights as soon as a person comes to grasp a general principle that is likely to lead to one or more practical applications. It is hardly a stretch of the English language to say that, for instance, the idea of producing light by passing an electric current through a material with a moderately high level of electrical resistance is in some sense a "useful" one. Alternatively, patent law could condition the award of exclusive rights on actual commercial exploitation through the sale of a working product based on that information. On this view, an invention simply is not useful until it is actually put to real-world use of demonstrated value. Patent law adopts neither of these positions. Instead, it follows something of a middle course,

[110] Filing a complete and enabling application with the USPTO qualifies as constructive reduction to practice. *See* 35 U.S.C. § 100(i).

[111] In addition to the priority rules described here, the time bar in patent law makes patentability depend on filing for patent protection relatively early, even if there is no danger of being beaten by a competitor. *See id.* § 202(g).

[112] *See* U.S. CONST. art. I, § 8, cl. 8 (empowering Congress "[t]o 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" (emphasis added)); 35 U.S.C. § 101 (stating that patent may be granted to one who invents something "new and useful").

requiring that a patent applicant demonstrate a non-speculative practical application for the invention.[113]

This is a relatively minimal showing and makes it possible to receive a patent at a fairly preliminary stage, when more needs to be done before the patentee can benefit from the patent.[114] Claimants do not need to show that an invention is commercially feasible or genuinely valuable,[115] and often decades—sometimes even centuries—pass before patents are commercialized in markets.[116] Nor must a claimant obtain regulatory approvals necessary to make or sell an invention—a crucial consideration with pharmaceuticals.[117] Nothing more is required to receive a patent, even under the AIA, once invention has occurred and been disclosed.

That said, the patent system as a whole does have features that push awards further down the developmental timeline, a number of which have become more

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[113] *See* ROBERT P. MERGES, PETER S. MENELL & MARK A. LEMLEY, INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE 186 (6th ed. 2012) (explaining that invention must have purpose and be able to perform that purpose).

[114] "The threshold of utility is not high: An invention is 'useful' under section 101 if it is capable of providing some identifiable benefit." Juicy Whip, Inc. v. Orange Bang, Inc., 185 F.3d 1364, 1366 (Fed. Cir. 1999); *see also* Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1571 (Fed. Cir. 1992) ("To violate § 101 the claimed device must be totally incapable of achieving a useful result . . . ."); Stiftung v. Renishaw PLC, 945 F.2d 1173, 1180 (Fed. Cir. 1991) ("An invention need not be the best or the only way to accomplish a certain result, and it need only be useful to some extent and in certain applications . . . .").

[115] *See, e.g.*, E. I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1260 n.17 (8th Cir. 1980) ("A small degree of utility is sufficient. The claimed invention must only be capable of performing some beneficial function. An invention does not lack utility merely because the particular embodiment disclosed in the patent lacks perfection or performs crudely. A commercially successful product is not required. Nor is it essential that the invention accomplish all its intended functions, or operate under all conditions, partial success being sufficient to demonstrate patentable utility. In short, the defense of non-utility cannot be sustained without proof of total incapacity." (citations omitted)). Commercial success nevertheless does play an important role in many cases in showing that an invention satisfies the separate requirement of non-obviousness. *Id.* at 1263 (stating that commercial success might be utilized as secondary consideration to determine obviousness or non-obviousness).

[116] *See* Kitch, *supra* note 27, at 272 tbl.1 (showing that great stretches of time often pass before patent grant and its commercialization).

[117] *See, e.g.*, *In re* Brana, 51 F.3d 1560, 1568 (Fed. Cir. 1995) ("FDA approval, however, is not a prerequisite for finding a compound useful within the meaning of the patent laws. Usefulness in patent law, and in particular in the context of pharmaceutical inventions, necessarily includes the expectation of further research and development. The stage at which an invention in this field becomes useful is well before it is ready to be administered to humans. Were we to require Phase II testing in order to prove utility, the associated costs would prevent many companies from obtaining patent protection on promising new inventions, thereby eliminating an incentive to pursue, through research and development, potential cures in many crucial areas such as the treatment of cancer." (citations omitted)).

pronounced of late. For one thing, while the utility requirement is generous, it has its limits.[118] An invention must actually work to be considered useful, even if it need not work especially well.[119] Moreover, the mere possibility, and perhaps even likelihood, that some use for an invention will later be discovered is insufficient to support a patent grant.[120] In addition, the invention must have some demonstrated benefit, however slight. Significantly, the Supreme Court has held that a substance cannot be considered useful merely because it is an object of active research by scientists, who suspect it may have beneficial properties.[121] This restriction, too, has been expanded upon and given more teeth in recent cases.[122] So while patent law does award rights at an earlier stage in the overall developmental process than it might, it also contains rules that limit early awards. The utility requirement thus serves as a doctrinal tool that draws the line between information that is and is not subject to individual ownership.

Other features of patent law also limit the availability of patents at very early stages of the inventive process. Under a set of long-standing judge-made exceptions to the statutory provision governing patentable subject-matter, abstract ideas and laws of nature, though often very valuable, are categorically excluded from patent protection.[123] Only practical applications of such

[118] *See* Arti K. Rai, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 BERKELEY TECH. L.J. 813, 839 (2001) (asserting that only utility requirement is particularly useful in determining how far removed research is from commercial end product to explain that strict interpretation of usefulness can be limiting).

[119] *See* Newman v. Quigg, 877 F.2d 1575, 1581-82 (Fed. Cir. 1989) (rejecting patent for perpetual motion device because it was inoperable and therefore lacked utility).

[120] *See* Brenner v. Manson, 383 U.S. 519, 532-36 (1966) (explaining that patents should not be granted on speculation of future usefulness).

[121] *Id.* at 534-36 ("Unless and until a process is refined and developed to this point—where specific benefit exists in currently available form—there is insufficient justification for permitting an applicant to engross what may prove to be a broad field.").

[122] *See, e.g.*, *In re* Fisher, 421 F.3d 1365, 1373 (Fed. Cir. 2005) (rejecting patent where all "asserted uses represent mere hypothetical possibilities"); *see also* Utility Examination Guidelines, 66 Fed. Reg. 1092, 1093 (proposed Jan. 5, 2001) (stating that "specific, substantial, and credible utility" is necessary to fulfill utility requirement).

[123] *See* Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) ("The laws of nature, physical phenomenon, and abstract ideas have been held not patentable."); Parker v. Flook, 437 U.S. 584, 594 (1978) ("Even though a phenomenon of nature or mathematical formulation may be well known, an inventive application of the principle may be patented. Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application."); Gottschalk v. Benson, 409 U.S. 63, 67 (1972) ("Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work."); Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948) ("He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes."); O'Reilly v. Morse, 15 U.S. (15 How.) 62, 112-21 (1854) (explaining that one cannot patent use of steam, however developed, as motive power for particular purpose); Le Roy v. Tatham, 14

discoveries can be patented.[124] In recent years, the Supreme Court has enforced this constraint with particular vigor.[125] Other doctrines carry this principle further, so that even some ideas involving practical solutions to concrete problems are too far from practical success to be patentable. The specification of an invention in a patent application, for instance, must enable others to make and use the invention without resorting to "undue experimentation."[126] As a result, merely identifying the general form a solution to a problem will take without actually sorting out the details necessary to put the solution into action—think of the example of the incandescent light bulb above—is inadequate.[127]

The considerations that lie behind the various doctrines used to structure the timing of patent grants echo traditional thinking about first possession. Awarding an exclusive right to a compound merely because it may have beneficial properties could easily result in someone unable to discover its uses holding the right and impeding those who could do so. Generating the new substance is only half the battle; no rights in it will vest until at least some practical benefit has been discovered, apart from keeping labs busy. As the

U.S. (14 How.) 156, 175 (1853) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.").

[124] *See Parker*, 437 U.S. at 594 (stating that inventive concept in application of phenomenon of nature may be patentable); Mackay Radio & Tel. Co. v. Radio Corp. of Am., 306 U.S. 86, 94 (1939) ("While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.").

[125] *See* Alice Corp. Pty. v. CLS Bank Int'l, 134 S. Ct. 2347, 2354, 2360 (2014) (finding system and media claims "add nothing of substance to the underlying abstract idea" and therefore are patent ineligible); Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 133 S. Ct. 2107, 2117 (2013) (finding no patentable discovery when gene separated from surrounding genetic material); Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66, 92 (2012) (finding application of natural law of relationship between concentration of metabolites in blood and likelihood thiopurine drug will be ineffective to merely claim underlying law of nature, and therefore be unpatentable); Bilski v. Kappos, 561 U.S. 593, 612 (2010) (finding claims that "attempt to patent the use of the abstract idea of hedging risk in the energy market and then instruct the use of well-known analysis techniques to help establish some of the inputs into the equation" do not sufficiently add to underlying abstract principle).

[126] In such a case, for instance, the specification of the invention in the patent application will not enable others to make and use the invention without resorting to "undue experimentation." *See* 35 U.S.C. § 112 (2012) ("The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same . . . ."); *In re* Wands, 858 F.2d 731, 737 (Fed. Cir. 1988) ("[E]xperimentation needed to practice the invention must not be undue experimentation.").

[127] *See* Incandescent Lamp Patent, 159 U.S. 465, 475-77 (1895) (finding complainant not entitled to "monopoly of all fibrous and textile materials for incandescent conductors").

Supreme Court explained it, "[A] patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion."[128] The Court did not cite *Pierson v. Post* in making this pronouncement, but it might well have. A grant prior to the development of a practical application risks ending the race too soon. Those more capable of putting the compound to practical use may be prevented from doing so if it is already subject to patent's exclusivity.[129]

At the same time, an approach deeming the invention useful later in time—upon commercialization, say—would create serious risks of either wasteful duplication of effort or lost investment, undercutting much of the incentive to obtain patent protection and, by hypothesis, to innovate in the first place.[130] In the pharmaceutical context, for instance, moving from the search for some practical application to commercialization requires clinical trials, a process that often takes around five to seven years and involves a cost that usually exceeds the preceding research.[131] If usefulness depended on crossing these additional thresholds, it is more likely that pharmaceutical companies would be deterred from joining the race to develop new drugs since there would be a greater likelihood of losing a considerable investment if another company manages to

[128] Brenner v. Manson, 383 U.S. 519, 536 (1966). Note that while the first to invent rule of priority, in place when *Brenner* was decided, would grant the exclusive right to the party who started the chase slightly earlier than its competitor, the utility requirement sets the location of the utility bar in patent law on the broader invention procurement timeline.

[129] A similar point can be made about improvements to patented inventions. If those who discovered improvements on existing technology were precluded from obtaining patent protection for them, in effect by granting a complete patent right to the holder of the original patent at the moment of its issuance, the contest to develop such improvements might be ended too soon. *See* Mark A. Lemley, *Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1000-10 (1997) (explaining that trying to improve existing invention is integral to competitive process and that improvers must avoid literal scope of patent claims); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 872-77 (1990) ("If a property right on a basic invention covers a host of potential improvements, the property right holder can be expected to develop the basic invention and some of the improvements. But we would expect a single rightholder to *under*develop—or even ignore totally—many of the potential improvements encompassed by their broad property right.").

[130] *See* Duffy, *supra* note 15, at 445 (explaining that allowing "patenting prior to the bulk of the investment needed to bring the innovation to market" makes competition more efficient by "ensuring that the predominant private cost of patent racing is not the premature expenditure of resources on developing the innovation or the duplication of innovative efforts").

[131] *See* Joseph A. DiMasi, Ronald W. Hansen & Henry G. Grabowski, *The Price of Innovation: New Estimates of Drug Development Costs*, 22 J. HEALTH ECON. 151, 167 (2003) (finding that clinical testing costs outweigh preclinical research costs per approved new drug).

complete the lengthy and expensive commercialization process more quickly.[132] A grant of exclusive rights somewhat before or around the conclusion of the applied research phase, as current doctrine allows, promises the inventor the right to pursue the inventive process through commercialization without the danger of losing this investment.[133] Broadly speaking, patent doctrine strikes a plausible balance between the dangers of early grants and the dangers of late ones along the R&D chronology.

B. *Trademark*

Priority. Trademark law is a system based upon temporal priority—conflicting claims to the same mark are resolved using a first-in-time principle.[134] As is characteristic of such systems, parties often compete in a race to own trademarks.[135] That first-in-time principle applies to the conduct of rival claimants: trademark rights generally go to the first to use a distinctive[136] mark in commerce.[137] This requirement has two elements: use and distinctiveness. Requiring "use" of a trademark has a fairly clear connection to possession.[138] Possession is the basic precondition of use, and to use a resource is almost

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[132] *Id.* at 468-71 (detailing how probabilities will impact motivations for companies to enter race for developing given innovation).

[133] *See In re* Brana, 51 F.3d 1560, 1568 (Fed. Cir. 1995) ("Were we to require Phase II testing in order to prove utility, the associated costs would prevent many companies from obtaining patent protection on promising new inventions, thereby eliminating an incentive to pursue, through research and development, potential cures in many crucial areas such as the treatment of cancer.").

[134] *See* 15 U.S.C. § 1057(c) (2012) (stating that filing application to register mark confers right of priority except against person who had previously used or applied to register the mark).

[135] *See* Zazu Designs v. L'Oreal, S.A., 979 F.2d 499, 503 (7th Cir. 1992) ("[O]ne must win the race to the marketplace to establish the exclusive right to a mark.").

[136] *See* Abercrombie & Fitch Co. v. Hunting World, Inc., 537 F.2d 4, 9-10 (2d Cir. 1976) (expounding concept of distinctiveness).

[137] *See* Lanham Act § 1(a), 15 U.S.C. § 1051(a) (providing trademark registration for mark "used in commerce"); U.S. PATENT & TRADEMARK OFFICE, TRADEMARK MANUAL OF EXAMINING PROCEDURE § 900 (2018) (allowing for registration of trademark only if application includes verified statement that mark was in use in commerce as of filing date). *But see* Lanham Act § 1(b), 15 U.S.C. § 1051(b) (allowing for registration of mark based on "intent-to-use" within six months of filing).

[138] *See* Hanover Star Milling Co. v. Allen & Wheeler Co., 208 F. 513, 516 (7th Cir. 1913) (detailing that trademark infringement does not damage trademark, but instead damages trade and business by removing trademark's meaning in use); FRANCIS H. UPTON, A TREATISE ON THE LAW OF TRADE MARKS WITH A DIGEST AND REVIEW OF THE ENGLISH AND AMERICAN AUTHORITIES 10 (1860) ("[P]roperty in trade marks, exclusive and absolute, has existed and been recognized as a legal possession, which may be bought, and sold, and transmitted, from the earliest days of our recorded jurisprudence.").

axiomatically to possess it.[139] Trademark law's requirement of possession is thus implicit in the use requirement: only one who has seized upon a distinctive mark as the emblem of her business or its product can use it as its trademark.[140]

The distinctiveness requirement adds a conceptual wrinkle. Distinctiveness refers to a characteristic of the mark, namely its capacity to designate the source of goods and services.[141] Protectable marks fall into two different categories. Some are considered inherently distinctive because they are either wholly invented, as with "fanciful" marks like Exxon, or because they do not refer to any particular characteristic of the products they are associated, as with "arbitrary" marks, like Apple for computers.[142] For these sorts of marks, trademark protection begins as soon as they are used in commerce. Other marks, however, require more. Most notably, a mark will be considered descriptive if it connotes some characteristic of the product or service it pertains to, such as Holiday Inn used in connection with hotels.[143] Descriptive marks are not considered inherently distinctive and can only be protected if and when they have "acquired distinctiveness," often referred to as having obtained "secondary meaning."[144] In essence, this requires that consumers who encounter the mark recognize that in addition to any dictionary meaning or descriptive quality—vacation lodgings in the case of Holiday Inn—the term also designates a specific

[139] The commercial aspect of the necessary use is arguably inherent in the nature of trademarks. Trademarks are commercial emblems, and thus the kind of use that is relevant is use as a way of designating commercial products. *See Hanover Star Milling Co.*, 208 F. at 515 ("Use of an arbitrary and distinctive mark to indicate the origin or ownership of articles of trade—the dealer's 'commercial signature'—is very old.").

[140] *See id.* at 515-16 (stating that "the property or right in the trade is protected from injury by preventing a fraud-doer from stealing the complainant's trade by means of using the complainant's 'commercial signature'").

[141] *See Abercrombie & Fitch Co.*, 537 F.2d at 8-9 (explaining that mark is distinct if it comes to identify company, not the product, because competitors cannot be deprived of calling product by its name).

[142] *See* 15 U.S.C. § 1125(c)(1) (stating that "the owner of a famous mark that is distinctive, inherently or through acquired distinctiveness" is entitled to injunctive relief if someone causes dilution of mark); *Abercrombie & Fitch Co.*, 537 F.2d at 11 n.17 ("[T]he term 'fanciful,' as a classifying concept, is usually applied to words invented solely for their use as trademarks. When the same legal consequences attach to a common word, i.e., when it is applied in an unfamiliar way, the use is called 'arbitrary.'"). This also includes "suggestive" marks, like Sunkist as applied to oranges, that may imply something about a product but stop short of actually describing it. *See* Stix Prods., Inc. v. United Merchs. & Mfrs., Inc., 295 F. Supp. 479, 488 (S.D.N.Y. 1968) ("A term is suggestive if it requires imagination, thought and perception to reach a conclusion as to the nature of goods.").

[143] *See Stix Prods., Inc.*, 295 F. Supp. at 488.

[144] *See* Lanham Act § 2(f), 15 U.S.C. § 1052(f) (prohibiting registration of descriptive marks unless acquired distinctiveness has been shown); *In re* Hehr Mfg. Co., 279 F.2d 526, 528 (C.C.P.A. 1960) (requiring that "unless a design is inherently distinctive it is registrable only if sufficient evidence is presented to show it has acquired secondary meaning").

brand.[145] Secondary meaning can develop over a period of time in which the public gets to meet the mark in market settings such as on products and services and in advertisement. So far as trademark law is concerned, a descriptive term or symbol simply is not a trademark until secondary meaning has been acquired.[146] In this way, the treatment of descriptive marks also aligns with the rule of capture model.

Over time, there have been some adjustments to this basic model. Trademark law has come to embrace elements of a first-committee-searcher model. In 1988, Congress moved away from its mandatory prerequisite of actual use in commerce. For the first time, it allowed parties, in the alternative, to reserve exclusive rights to marks based on a mere "intent to use" them in commerce.[147] By filing an "intent to use" application, a party intending on adopting a mark within six months (a period that can be extended up to three years, if the applicant files periodically with the USPTO and affirms that she maintains a *bona fide* intention to use the mark)[148] can protect itself against another who has actually adopted a confusingly similar mark in commerce during that period. This exclusivity depends on the applicant retaining its intent to use and is conditioned on the eventual use of the mark in commerce. If the applicant fails to use the mark in commerce within the relevant time period, the trademark becomes free for others to adopt.[149] Thus, this statutory amendment adds a first-committed-searcher track to claiming a trademark. For trademarks, as with sperm whales, the prey becomes available for others to pursue if the hunter fails to maintain pursuit. Claiming an intent to use thus signifies a change of approach regarding priority disputes. Trademark law has evolved to allow first committed pursuers of particular trademarks to shift the rule governing priority disputes to a first-committed-searcher rule by filing an intent to use application and putting all potentially competing pursuers on notice. They can secure property rights at a relatively early point along the propertization timeline, thus enabling themselves to end the race early and establish priority to a mark before any

[145] Secondary meaning requires a showing "that the primary significance of the term in the minds of the consuming public is not the product but the producer." Kellogg Co. v. Nat'l Biscuit Co., 305 U.S. 111, 118 (1938). The requirement of secondary meaning applies to a broad range of marks, including descriptive marks, surname marks, sensory marks (sound, sight, scent, or color marks), some geographical marks, and product configuration trade dress.

[146] *See Abercrombie & Fitch Co.*, 537 F.2d at 10 (stating descriptive terms may be trademarked where demonstrated to be distinctive of producer's product in commerce).

[147] *See* Trademark Law Revision Act of 1988, 15 U.S.C. §§ 1051-1128. The Act became effective on November 16, 1989. To some extent, this change may have curtailed what was in effect a more generous understanding of actual use sufficient to confer priority.

[148] *See* 37 C.F.R. § 2.89 (2018) (allowing "[e]xtensions of time for filing a statement of use").

[149] *See* 15 U.S.C. § 1051(d) (requiring applicant to submit statement that mark has been used in commerce within six months of notice of allowance).

commercial use takes place.[150] Just like in the case of sperm whales, doing so protects the first committed pursuer against third party intervention—which may involve free-riding—in the hunting process.

Along similar lines, the rise of the "analogous use" doctrine in trademark law signals a move away from a rule of capture approach and toward a first-committed-searcher model when it comes to priority disputes among competing pursuers. The analogous use doctrine allows trademark developers to claim priority based on certain activities that make the mark known to the consuming public—such as widespread preannouncement of a product in advertisement that uses the mark—occurring before actual use in commerce of the good or service.[151] Like intent-to-use applications, the doctrine of analogous use guarantees a first committed pursuer of a mark—who might be engaging in prerelease promotional use—priority over a second-comer who is the first to actually use the mark in commerce.

In the case of descriptive marks, however, trademark doctrine moved in the other direction, pushing priority disputes away from a first-committed-searcher rule towards a rule of capture. Since descriptive marks require the development of secondary meaning, which is often a lengthy process, the possibility of simultaneous adoption is pronounced. Priority disputes similar to the sort described for patent law in Figure 3 arise frequently with descriptive marks.[152] Imagine a situation in which Firm *A* decides to adopt a descriptive term as a trademark and begins using it in commerce. Firm *B* subsequently decides to use the same term as its own trademark and then manages to acquire secondary meaning first, while Firm *A* is still working toward that goal. Between the two, who should have an exclusive right to the mark, the one who first used the descriptive term in commerce in a trademark-like way or the one who was the second to use, but the first to achieve secondary meaning?

At one time, some courts and commentators advanced the idea that Firm *A* should be protected against Firm *B*'s use, so long as Firm *A*'s secondary meaning

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[150] *Id.* § 1051(b) (offering protection for six months, and possibly up to three years, before actual use in commerce as long as there is a *bona fide* intent to use).

[151] *See, e.g.*, Md. Stadium Auth. v. Becker, 806 F. Supp. 1236, 1239 (D. Md. 1992) (stating that "sale of goods or services using an unregistered mark is not necessary to establish use of the mark" and that under certain conditions advertising and promotion may suffice); Shalom Children's Wear, Inc. v. In-Wear A/S, 26 U.S.P.Q.2d 1516, 1519 (T.T.A.B. 1993) ("Use analogous to trademark use . . . is nontechnical use of a trademark in connection with the promotion or sale of a product under circumstances which do not provide a basis for an application to register . . . . [S]uch use has consistently been held sufficient use to establish priority rights as against subsequent users of the same or similar marks.").

[152] *See, e.g.*, U.S. PATENT & TRADEMARK OFFICE, PROTECTING YOUR TRADEMARK: ENHANCING YOUR RIGHTS THROUGH FEDERAL REGISTRATION 14 (2016) (explaining that applicant may have strong rights to priority based on long use and may be able to intervene in opposition proceeding if applicant's rights are stronger than another applicant who applied first).

was "in the making."[153] In a sense, they applied a first-committed-searcher rule to the first possession of descriptive marks: if Firm *A* was the first to start pursuing secondary meaning in a descriptive term, and remained committed to that goal, it would prevail over Firm *B*, who adopted the term later and then grabbed the secondary meaning from under Firm *A*'s hands. In other words, they followed the model advocated by the *Pierson v. Post* dissent and adopted, for among others, sperm whales and patentable inventions prior to the AIA. Others, however, held that in these circumstances, rights in the mark should go to Firm *B*, the party who was second to join the race yet first to acquire secondary meaning in the mark.[154] This approach can be said to follow the conception of first possession grounded in actual capture: rights in a descriptive mark go to the first claimant to actually acquire secondary meaning for the mark, not just to set out and try to do so. Support for the secondary meaning in the making doctrine eventually dissipated and today courts award priority to the first party to complete the process of acquiring secondary meaning, regardless of whether they were the first to begin trying.[155]

Protectability. Trademark law involves choices about the timing of rights not simply in the sense of determining which of two essentially simultaneous competitors will receive trademark protection, but also the rights a trademark holder will receive against remote and future rivals. For one thing, trademark law has long given trademark holders priority not only within the confines of the current geographic and product markets in which their marks are used but also in those in which they are likely to expand.[156] A similar issue concerns the type of protection received. The cornerstone of classical trademark law, for instance, is protection against "consumer confusion," meaning that consumers erroneously select the wrong product, or at least have a harder time ascertaining which of two products is the one they want. Generally speaking, trademark law

[153] *See* Jolly Good Indus., Inc. v. Elegra Inc., 690 F. Supp. 227, 230-31 (S.D.N.Y. 1988) (finding where secondary meaning is in making a mark will be protected against intentional infringers); Metro Kane Imports, Ltd. v. Federated Dept. Stores, Inc., 625 F. Supp. 313, 318 (S.D.N.Y. 1985), *aff'd sub nom.* Metro Kane Imports v. Brookstone Co., 800 F.2d 1128 (2d Cir. 1986) (explaining secondary meaning doctrine derives support from second comer doctrine, which states senior user has right not to have second comer intentionally cause confusion); 3 RUDOLF CALLMAN, THE LAW OF UNFAIR COMPETITION, TRADEMARKS AND MONOPOLIES 356-57 (3d ed. 1971) ("A mark with secondary meaning in-the-making should also be protected, at least against those who appropriate it with knowledge or good reason to know of its potential in that regard, or with an intent to capitalize on its goodwill." (footnote omitted)).

[154] *See, e.g.*, Cicena Ltd. v. Columbia Telecomms. Grp., 900 F.2d 1546, 1549 (Fed. Cir. 1990).

[155] *See* Zatarain's, Inc. v. Oak Grove Smokehouse, Inc., 698 F.2d 786, 791 (5th Cir. 1983) (citing cases where acquiring secondary meaning established trademark rights).

[156] *See, e.g.*, AMF, Inc. v. Sleekcraft Boats, 599 F.2d 341, 349 (9th Cir. 1979) (listing likelihood of expansion of product lines trademark infringement factor).

does not protect against all uses of a word or other source signifier, but only against those that involve its use as a trademark within the relevant market context.[157] In recent years, however, trademark protection has expanded in a number of ways, such as protection against uses that are likely to mislead with respect to sponsorship or endorsement.[158] Still other provisions of trademark law expand protection in other ways having to do with the contest over what precisely trademark law allows to be claimed. Perhaps most notably, the Anti-Cybersquatting Act gives trademark-holders special rights in domain names incorporating their trademarks.[159]

These are all examples of a particular kind of shift away from a rule of actual capture toward earlier claiming. They reflect ways in which trademark law allows "capturing" one thing—a particular trademark in a particular market—to trigger an award of rights in something else that has not itself been captured. It is like awarding title to fishery by virtue of having caught one of the fish within it. In this sense, they represent an early claiming approach to the award of trademark rights.

Trademark law also showcases another potentially useful dynamic of institutional design where possessory rules are concerned. The basic model we have depicted so far is essentially binary, but it is possible to use additional points on the developmental timeline to confer additional rights. Trademark protection is strengthened in various ways for holders of marks who have completed steps beyond simple capture. For example, one of the factors used to assess likelihood of confusion,[160] the lynchpin of trademark infringement, is the strength of a trademark.[161] Trademark doctrine explicitly makes it easier for

[157] *Id.* at 350 (identifying product market, price, and proximity as factors used to determine infringement).

[158] Anti-Cybersquatting Consumer Protection Act, 15 U.S.C. § 1125 (2012) (listing as actionable confusion with respect to affiliation, sponsorship or approval).

[159] *Id.* (creating cause of action against registration or use of domain name confusingly similar to trademark). Relatedly, respecting the priority element of first possession, the Anti-Cybersquatting Act also grants a trademark holder a superior claim to a website address even though someone else was the first to claim and use it, if that use was not made in good faith. *See id.* §1125(d)(1)(A)(i) (giving right of action for bad faith intent to profit from protected mark similar to domain name).

[160] *See Sleekcraft Boats*, 599 F.2d at 348-49 (setting forth non-exhaustive eight-factor test to determine likelihood of confusion between marks).

[161] For marks that are not inherently distinctive, strength is measured in terms of the degree of secondary meaning that has been acquired. *See* Star Indus. v. Bacardi & Co., 412 F.3d 373, 381 (2d Cir. 2006) ("Alternatively, even if not inherently distinctive, the mark may be distinctive by virtue of having acquired a 'secondary meaning' in the minds of consumers."); Timothy Denny Greene & Jeff Wilkerson, *Understanding Trademark Strength*, 16 STAN. TECH. L. REV. 535, 539 (2013) (identifying brand strength as separate from trademark strength).

owners of stronger marks to show infringement.[162] Anti-dilution law provides an even clearer example of this tendency. In 1996, Congress amended the Lanham Act to confer rights against having one's trademark "diluted" by someone else's, even if the other person's mark does not create any confusion in the minds of consumers as classic trademark principles require.[163] But this protection is available only for "famous" marks[164] and requires widespread brand recognition among the general consuming public.[165] It goes well beyond the level of consumer recognition and mental association sufficient to establish secondary meaning for descriptive marks, for which recognition among a smaller subset of consumers is sufficient.[166] To use the hunt analogy, before rights against dilution will be awarded, trademark law requires not just capture but something like outright slaughter. Upon the pursuer's reaching a later point in time in the chase chronology—the point of fame, or equivalently, upon meeting a higher standard of performance regarding the trademark, trademark law awards the pursuer additional property. With greater possession, one might say, come greater rights. Note that rights against trademark dilution do not involve the priority element of first possession, but only the protectability aspect. In dilution settings, there is typically only one potential claimant who can argue for nationwide fame in a particular mark, and trademark dilution doctrine controls the award of property rights even in the absence of any actual ownership race.[167]

A similar point can be made about trademark registration. Priority in trademark law has traditionally been geographical as well, not only temporal.[168] Rights in unregistered trademarks go to the first to use a distinctive mark in

[162] Abercrombie & Fitch Co. v. Hunting World, 537 F.2d 4, 10 (2d Cir. 1976) ("The term which is descriptive but not generic stands on a better basis.").

[163] Federal Anti-Dilution Act of 1995, Pub. L. No. 104-98, 109 Stat. 985 (codified as amended at 15 U.S.C. §§ 1125, 1127) ("The term 'dilution' means the lessening of the capacity of a famous mark to identify and distinguish goods or services.").

[164] 15 U.S.C. § 1125 (c)(1) (granting dilution protection respecting "famous" marks); *id.* § 1125(c)(2) (defining when mark is famous and detailing facts to consider).

[165] *See id.* § 1125(c)(2)(B) (listing "degree of recognition of the famous mark" as factor in determining whether another mark is likely to cause dilution by blurring).

[166] *See* Coach Servs., Inc. v. Triumph Learning LLC, 668 F.3d 1356, 1379 (Fed. Cir. 2012) (identifying consumer studies as factor for consideration of whether mark has attained secondary meaning).

[167] *See* 15 U.S.C. § 1125 (noting that burden of proof in dilution claim first requires proving fame).

[168] *See* Thomas J. Carroll & Son Co. v. McIlvaine & Baldwin, 183 F. 22, 26-28 (2d Cir. 1910) (denying trademark protection for plaintiff in New York but recognizing protection rights in Baltimore); Mark P. McKenna, *The Normative Foundations of Trademark Law*, 82 NOTRE DAME L. REV. 1839, 1889 (2007) ("Other parties had the right, however, to use a mark in other markets in which the senior user had not labored.").

commerce in a particular geographical area.[169] For example, as between a New York user and a California user of the same unregistered mark, the rights to the mark in Kansas go to the first to use the mark in commerce there. Federal registration of marks, however, establishes nationwide constructive use, conferring priority in all geographical markets, including those where the mark has not yet been used.[170] Registration can thus be seen as awarding an exclusive nationwide right at an early time, one that is prior to actually using the mark in each and every jurisdiction. So while it is true that trademark law generally requires actual use, which is akin to actual capture, to establish priority, the availability of registration allows claiming earlier in time in new geographic markets, thus giving the registrant the exclusive right to complete the nationwide chase uninterrupted.

C. *Copyright*

Priority. On its face, copyright law does not appear to entail a priority-based system akin to those in patent and trademark law. Copyright only protects against copying; a copyright-holder cannot sue a second-comer who independently generated a similar, or even identical, work.[171] But appearances can be deceiving, and there is a more substantial priority element in copyright law than is often realized. Suppose Picasso and Peter separately produce highly similar paintings and it is undisputed that Picasso's was painted a year before Peter's. In theory, Peter should not be liable for copyright infringement because he created his work independently. In practice, however, he may have a hard time making his case in court. Were Picasso to sue Peter, the court would have no crystal ball to determine whether this was a case of independent creation or copying. The court would likely resolve the case—as courts usually do—using circumstantial evidence by looking to the degree of access Peter had to Picasso's work and the similarity between the two works.[172] The more accessible Picasso's painting was to Peter and the more similar Peter's work is to Picasso's, the more plausible the inference that the similarities between the two resulted from

[169] *See* Stone Creek, Inc. v. Omnia Italian Design, Inc., 875 F.3d 426, 436 (9th Cir. 2017) ("[C]ommon-law trademark rights extend only to the territory where a mark is known and recognized, so a later user may sometimes acquire rights in pockets geographically remote from the first user's territory.").

[170] Even holders of unregistered marks, moreover, enjoy priority in markets where expansion is considered natural or likely. *See* United Drug Co. v. Theodore Rectanus Co., 248 U.S. 90, 99-103 (1918); Hannover Star Milling Co. v. Metcalf, 240 U.S. 403, 405-09 (1917).

[171] *See* Sheldon v. Metro-Goldwyn Pictures Corp., 81 F.2d 49, 54 (2d Cir. 1936) ("[I]f by some magic a man who had never known it were to compose anew Keats's Ode on a Grecian Urn, he would be an 'author,' and, if he copyrighted it, others might not copy that poem, though they might of course copy Keats's.").

[172] *See, e.g.*, Arnstein v. Porter, 154 F.2d 464, 468-69 (2d Cir. 1946) (expounding on use of circumstantial evidence in copyright infringement cases).

copying. Creators of commercially successful or other widely distributed works are thus often able to show that the creator of a later-produced work had access to their own earlier work.[173] The more widely distributed the earlier work is, the greater the likelihood that courts will conclude that the alleged infringer actually encountered the work,[174] whether she actually did so or not. Thus, in practice, priority plays an important role in copyright law.

Note that in addition to the formal law of copyright, copyright-like rules also develop in the informal context of social norms. Indeed, as a driver of economic and social value, priority may be of the utmost importance, even without any particular emphasis or importance under formal law. As between two authors—standup comedians, for example—the first to publish or reach the market is likely to get most of the acclaim or profit, even when the second-comer who created independently cannot be accused of formal copyright infringement.[175] As a practical matter, a later independent creator will often reap no substantial reputational or financial benefit from her work.[176] For these economic and social reasons as well, copyright law involves a substantial element of priority.

The award of copyrights follows what can be thought of as a rule of capture.[177] Under copyright law as it stands today, copyright protection essentially turns on two requirements. First, a work must be "fixed in any tangible medium of expression,"[178] meaning that it is embodied in physical form—written down,

[173] *See* Baxter v. MCA, Inc., 812 F.2d 421, 423 (9th Cir. 1987) ("Because direct evidence of copying is rarely available, a plaintiff may establish copying by circumstantial evidence of: (1) defendant's access to the copyrighted work prior to the creation of defendant's work, and (2) substantial similarity of both general ideas and expression between the copyrighted work and the defendant's work.").

[174] Access is itself indirect evidence of exposure to the work. It is very hard to avoid concluding that copying has occurred if the second creator actually knew the earlier work: one cannot dream up an idea that one already has in mind, so unless a person has forgotten something to which they were exposed before producing their own work, actual exposure will tend to rule out the possibility of independent creation.

[175] *See* Dotan Oliar & Christopher Sprigman, *There's No Free Laugh (Anymore): The Emergence of Intellectual Property Norms and the Transformation of Stand-Up Comedy*, 94 VA. L. REV. 1787, 1826-27 (2008) (noting that under informal norm system among standup comedians, ownership of joke goes to first to tell it publicly, notwithstanding formal copyright of second comedian who created it independently).

[176] *See* Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281, 299-308 (1970) (demonstrating different benefits to first creator, and also that even without copyright law second copier may reap no benefits due to powerful position that first to reach market possesses).

[177] *See* Drassinower, *supra* note 33, at 191 ("Because it specifies the mode of acquisition in copyright law, the originality requirement is analogous to the requirement of first possession or occupation in property law.").

[178] *See* 17 U.S.C. § 102 (2012).

filmed, painted, printed, and so on.[179] This requires a considerable degree of specificity and completeness, consistent with a rule of capture. Only those works that have been completed, in the sense of actually being recorded and preserved in material form, are protectable.[180] Second, a work must be original.[181] This does not require uniqueness, but it does require that the work either be created independently of any identical work or that it depart from any materials from which it borrows in a way that includes a minimal exercise of creativity.[182] So while pure copying will not support copyright protection, courts do not inquire into the aesthetic or expressive merit of a work.[183] Similar to the patent law's generous utility requirement, copyright requires that a claimant produce a work having some creative element, but it need not represent a significant commercial or artistic accomplishment.[184] It is possible to imagine a system in which the award of rights was delayed beyond mere capture—to publication, for instance, or a demonstration that a work is either a commercial success or a source of substantial social value. And to the extent copying is assessed by considering how widely the work has been distributed, priority as a practical matter is to some extent resolved in this way. But generally speaking, copyright law corresponds with an ordinary capture model, requiring that the work be in hand, but not that it be cultivated or put to use.[185]

Protectability. Timing issues are also affected in important ways by a variety of rules and principles that shape the scope of copyright protection. One critical issue involves the assignment of rights to derivative works. A derivative work is a creation based upon one or more underlying copyrightable works, such as a

[179] *See* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 460-61 (1984) (acknowledging fixed physical form to be sufficient prerequisite to copyright protection).

[180] An earlier draft of a work can be protected under copyright law, however, as though it were a final edition.

[181] *See* 17 U.S.C. § 102 ("Copyright protection subsists, in accordance with this title, in original works of authorship . . . .").

[182] *See* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991) ("Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity.").

[183] *See* Bleistein v. Donaldson Lithographing Co., 188 U.S. 239, 251 (1903) ("It would be a dangerous undertaking for persons trained only to the law to constitute themselves final judges of the worth of pictorial illustrations, outside of the narrowest and most obvious limits.").

[184] *See Feist Publ'ns, Inc.*, 499 U.S. at 363 ("As a constitutional matter, copyright protects only those constituent elements of a work that possess more than a *de minimis* quantum of creativity.").

[185] *Cf.* Stewart v. Abend, 495 U.S. 207, 228-29 (1990) (stating that "nothing in the copyright statutes would prevent an author from hoarding all of his works during the term of the copyright").

translation, a sequel, a movie version of a book, or an abridgement.[186] Here, copyright law has done an about-face. Until at least the mid-nineteenth century, rights to derivative works were often assigned to those who produced them and were awarded only after they had been produced. A famous 1853 case, for example, decided that the copyright to a German translation of *Uncle Tom's Cabin* belonged to the person who was first to actually produce that translation, rather than to Harriett Beecher Stowe.[187] At that time, copyright law awarded rights to derivative works using a rule of capture.[188] Translations were treated, in essence, like right whales: the first person to create a translation would have a copyright in their translation (though another independent translator would have a copyright in whatever translation they produced).[189] Copyright in translations attached only when the translation was completed. Under modern copyright law, however, rights to derivative works belong to the author of the underlying original work.[190] Ownership of derivative works is established when the original, not the derivative work is produced.[191] The author of the underlying original enjoys the exclusive right—secured for the limited time of the duration of the copyright in the original—to complete the chase for any follow-on creations, uninterrupted. So far as derivative works are concerned, copyright law awards rights very early, at the point an author has created the underlying work upon which the derivative is based.[192]

Outside the context of derivative works, however, copyright law generally resists such early stage awards. Copyright doctrine determines the point (on the continuum of actions necessary to produce and disseminate a creative work) at which an author is deemed to be in possession of the work, having made enough progress for copyright protection to attach. In copyright infringement cases, the critical question is often whether the plaintiff came into possession at all, and thus ownership, of the allegedly infringed elements in her work. The chief principle of copyright law directed to this question is embodied in the so-called

[186] *See* 17 U.S.C. § 101 (defining derivative works).

[187] *See* Stowe v. Thomas, 23 F. Cas. 201, 201-08 (C.C.E.D. Pa. 1853) (No. 13,514) (holding that translation is not copying).

[188] It was not until the Copyright Act of 1976 that derivative works were granted protection. Copyright Act of 1976, Pub. L. No. 94-553, § 103, 90 Stat. 2541, 2545 (codified at 17 U.S.C. § 103) (extending copyright protection to limited derivative works).

[189] *See Stowe*, 23 F. Cas. at 207-08 (dismissing notion of copyright covering translation as ridiculous).

[190] 17 U.S.C. § 106(2) (asserting that original copyright holder has right "to prepare derivative works based upon the copyrighted work").

[191] *See id.* (asserting that completion of original work triggers rights in derivative works); U.S. COPYRIGHT OFFICE, COPYRIGHT IN DERIVATIVE WORKS AND COMPILATIONS 2 (2013), https://www.copyright.gov/circs/circ14.pdf [https://perma.cc/B3HX-TCBH] ("Only the owner of copyright in a work has the right to prepare, or to authorize someone else to create, an adaptation of that work.").

[192] *See* 17 U.S.C. § 106(2) (asserting that original creator has right to prepare derivatives).

idea-expression dichotomy. It is black-letter law that copyright law does not protect "ideas," only original expressions of them.[193] While the "idea-expression dichotomy" seems to posit dichotomous categories, in practice the doctrine acknowledges that idea and expression are opposing ends of a metaphorical spectrum, and that between lies a wide and often rather murky borderland. The classic test distinguishing unprotectable idea from protectable expression was set out by Judge Learned Hand, in a case dealing with an original stage play and an allegedly infringing movie having certain plot similarities:

> Upon any work, and especially upon a play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. . . . there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his "ideas," to which, apart from their expression, his property is never extended.[194]

Hand's Levels of Abstraction test, as it has come to be called, can be reframed in terms of our now-familiar possessory continuum. A playwright sets out to write a play. She starts out with an abstract and preliminary motivating idea, and as she moves further along the creation path she develops the plot scene after scene, adding detail—such as names, times, places, and characters—and gradually making her idea less abstract and more concrete. Somewhere along this continuum of increasing concretization lies the point at which expression is distinguished from idea. Any version of the work lying to the "left" of that point would be regarded by copyright doctrine as an abstract idea, free for the taking.[195] Any version of the work lying to its "right" is regarded by copyright doctrine as an original expression, subject to possession and thus property, and whose copying may trigger liability for infringement. The point at which an author passes from idea to expression is copyright's equivalent of capture. Up to that point, the work of authorship is still evanescent. But as the author moves across the borderline between idea and expression, she has completed the chase and has established her property right.[196]

Like the utility doctrine and the abstract idea exclusion from patentable subject-matter, copyright's idea-expression dichotomy seeks to ensure that protection is awarded only after the completion of substantial steps along the developmental timeline. In some cases, the real breakthrough—the hardest part to achieve and the source of the greatest overall value—may lie in the general

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[193] *See id.* § 102(b) ("In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery . . . .").

[194] *See* Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930).

[195] *See, e.g.*, Idema v. Dreamworks, Inc., 162 F. Supp. 2d 1129, 1185 (C.D. Cal. 2001) (rejecting use of earlier drafts of screenplay to establish infringement).

[196] *See* Edward Samuels, *The Idea-Expression Dichotomy in Copyright Law*, 56 TENN. L. REV. 321, 341 (1989) (discussing "abstraction test" for explaining nature of idea-expression dichotomy (citing *Nichols*, 45 F.2d at 121)).

concept. One writer or musician's work may spawn an entire genre of subsequent works, a creative style, or a go-to technique. But the view taken in copyright is that this is not sufficient. A genre cannot exist on its own, without works embodying it concretely, and it is only when those works are completed that protection arises. Only an author actually in possession of a specific, concrete expression of a general idea can claim copyright protection.

III. GRASPING POSSESSION

This Article has thus far shown that IP doctrines can be analogized to first possession rules, both conceptually and in terms of their underlying functional foundations. This Part now explores implications. The previously described framework suggests ways to think about some pressing current questions in intellectual property and to evaluate the way the law has developed in recent years. In the discussion that follows, this Part begins by looking at several specific IP rules and policies that affect the initial award of IP rights. Outlining an integrative and prescriptive analysis of original acquisition in intellectual property across doctrinal boundaries, this Part offers some broader observations about the challenges of intellectual property and its relationship to the institution of property.

A. *Doctrinal Implications*

1. Patent Trolls: Of Abstract Ideas and Inter Partes Review

Much patent law and policy in recent years has centered on perceived problems associated with the phenomena variously referred to as patent assertion entities ("PAEs"), non-practicing entities, or, most pejoratively, patent trolls. There is some disagreement about how exactly to define a patent "troll" and what the trouble with them actually is. The major concern with PAEs, one that was discussed by the Supreme Court, is that they profit by wielding hold-out leverage in cases where the patent at issue covers a relatively insignificant aspect of a much larger product, a problem that is particularly serious when notice of the patent was inadequate during the process of product development.[197] Another line of criticism associates patent trolling with nuisance or strike suits, where defendants settle infringement actions involving "weak" or bad patents simply because it is cheaper than litigating.[198] While some highlight certain

[197] *See* eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396 (2006) (Kennedy, J., concurring) (suggesting injunctive relief should be denied "[w]hen 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").

[198] *See id.* at 397 (noting "potential vagueness and suspect validity" of some business method patents).

social benefits associated with PAEs,[199] a recent study by the Federal Trade Commission voiced concerns about the business model of litigation-reliant PAEs, which tend to obtain litigation settlements that "might be considered nuisance value."[200]

The aforementioned major concern with PAEs can be understood within the framework developed here: it is simply the problem of premature allocation of patent rights. As discussed above, a danger in early awards of property rights is that they may be given to parties who are initially leading the chase but who are eventually incapable of completing it successfully. As mentioned, such early misallocations involve subsequent transaction costs, in this case the cost of licensing the patents, under the threat and cost of pending litigation, to practicing entities who have often developed the same technology independently. The costs further involve the taxing of, or disincentivizing of, the activity of such capable, practicing entities. The proper solution to patent trolling is therefore pushing the moment of the patent grant to a later stage by requiring the performance of further steps along the patent's prospect before exclusive rights are granted. The natural and preferred way to do so doctrinally would be to invigorate the utility prerequisite to patentability, which is currently very low. Unfortunately, the legal system has treated the problem only symptomatically thus far.

The legal system has responded to concerns about patent trolls in at least two major ways. The first, a judicial response, is the Supreme Court's renewed emphasis on non-statutory exclusions from the domain of patentable subject matter for natural laws and abstract ideas, which appears to have resulted in a significant reduction in patents issued in areas like software and business methods.[201] The second, a legislative response, is the expansion of mechanisms that permit the USPTO to reconsider and cancel issued patents—chiefly through the inter partes review and post-grant review procedures, commonly referred to as "IPRs" and "PGRs."[202] Both the expansion of patentable subject-matter exclusions and procedures for expanded administrative review of patents can be understood as measures that delay the award of patent rights, albeit in different ways. Both reforms, however, show signs of a failure to appreciate the larger set of concerns and policy tradeoffs relevant to timing the award of IP rights and

[199] *See, e.g.*, Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457, 491 (2012).

[200] *See* FTC, PATENT ASSERTION ENTITY ACTIVITY: AN FTC STUDY 8-9 (2016) (giving statistics showing early settlement in patent suits brought by PAEs).

[201] *See* Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347, 2354 (2014) (describing Supreme Court's willingness to understand 35 U.S.C. § 101 (2012) as having "exclusionary principle"); Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66, 70 (2012) ("'[L]aws of nature, natural phenomena, and abstract ideas' are not patentable." (quoting Diamond v. Diehr, 450 U.S. 157, 185 (1981))).

[202] *See* 35 U.S.C. § 311 (2012) (outlining procedure for IPRs of issued patents); *id.* § 321 (outlining procedures for PGRs of issued patents).

could be modified to respond to the challenges of early awards while better avoiding the drawbacks of later ones.

The patentable subject-matter exclusions reflect an emphasis on applied uses and a concern that principles and knowledge should not be withdrawn from the public domain.[203] It is not enough to come up with an application of a newly discovered scientific principle or a newly created mathematical algorithm if the process of adapting those ideas into a practical application is itself purely obvious or routine. The Court's instinct is firmly grounded in basic principles of patent law. Patent law is concerned only with practical applications, rather than general truths about the world, and should therefore only award protection when such an application has been developed.[204] Furthermore, a patent on the application of such a general truth can sometimes amount to what is in effect a patent on a general truth itself, which may frustrate the overall goals of the patent system by inhibiting further discovery and innovation.[205] The Supreme Court's concern that the patentable subject-matter exclusions not be evaded through artful drafting[206] is perfectly sound.

But the reason for those exclusions must be kept in mind. Important discoveries about the world are excluded from patent protection in order to facilitate further discovery and the development of practical uses thereof. The Supreme Court's announced test for separating the abstract from the practical essentially asks how much value and innovation of a particular invention resides in the a novel principle's implementation, as distinguished from the principle itself.[207] But if the concern is to ensure, on the one hand, that the hunt really is completed and, on the other, that others remain free to compete for those prey not yet captured, this test misses the mark. Rather than focusing on the relative proportions of abstract knowledge versus practical insight in a particular invention, it would make more sense to consider the extent to which protection for a particular application would in practice amount to protection of the

[203] *See* Bilski v. Kappos, 561 U.S. 593, 612 (2010) (dismissing patent claim as abstract idea).

[204] *See* Brenner v. Manson, 383 U.S. 519, 536 (1966) (stating that "patent system must be related to the world of commerce rather than to the realm of philosophy").

[205] *See Mayo Collaborative Servs.*, 566 U.S. at 86 ("[T]here is a danger that the grant of patents that tie up their use will inhibit future innovation premised upon them, a danger that becomes acute when a patented process amounts to no more than an instruction to 'apply the natural law,' or otherwise forecloses more future invention than the underlying discovery could reasonably justify.").

[206] *See id.* at 72 ("[T]o transform an unpatentable law of nature into a patent-eligible *application* of such a law, one must do more than simply state the law of nature while adding the words 'apply it.'").

[207] *See* Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347, 2355 (2014) (describing the Supreme Court's two-step process for determining patent eligibility); *Mayo Collaborative Servs.*, 566 U.S. at 82 (denying patent for simply instructing application of known natural law).

unpatentable principle. So, for example, in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*,[208] a patent essentially reciting certain discoveries about human metabolism and only obliquely suggesting anything particular be done with those discoveries presents a serious risk that any other useful application of the biological facts discovered will infringe the patent, including those that do not reflect genuine "improvement[s]" upon it.[209]

When a patentee really has developed a useful application of a principle, the patent chase ought to be considered over, so far as that application is concerned. The real problem lies in the possibility that by claiming a particular specimen, the patentee will have de facto rights to a larger genus. Particularly in the context of process patents—where most of the mischief is thought to reside—the giveaway is usually in the verbs. Where the action that is described or called for is vague, there is a serious danger that the patent will cover not simply a particular application but a wider array of uses of a more general principle. *Mayo Collaborative Services* involved a patent purporting to claim a method of medical treatment, but whose central instruction to those performing it was that a specified level of a particular compound present in certain medical patients "indicates a need" to increase their drug dosage, while another specified level "indicates a need" to decrease it.[210] The phrasing was highly abstract; the verb referred to the compound itself, rather than to anyone who would carry out the method. There was therefore an obvious risk that the patent would apply not to a particular way that a fact about human metabolism might be put to use, but to a set of essentially unrelated uses of that information. In other words, the doctrine governing exclusions of natural laws and abstract ideas should function more like the patent equivalent of copyright's merger doctrine, which bars copyright protection when protecting a particular expression of an unprotectable idea would effectively wall off any expression of the idea.[211] The guiding concern ought to be the likelihood that patent protection will tie up general research and the development of novel applications unrelated to the particular application invented by the patentee.

While patentable subject-matter exclusions push patentability later in time conceptually speaking, IPRs and PGRs push the grant of patent protection later in a more practical sense. Although it has always been possible to challenge the validity of a patent in actual patent litigation, IPRs and PGRs have significantly expanded the ability to oppose patent grants while still in an administrative setting. In practice the effect has been to open up the question of validity substantially so that, in some sense, it is much more uncertain whether a patent

[208] 566 U.S. 66 (2012).

[209] *See id.* at 67-69; *see also* 35 U.S.C. § 101 (2012) (listing improvement as necessity for patent).

[210] *Mayo Collaborative Servs.*, 566 U.S. at 75.

[211] *See* Baker v. Selden, 101 U.S. 99, 102 (1879) (decrying copyright claim for particular accounting system using ruled lines as fraud against public).

is *ever* valid. Bad patents are, of course, bad, and weeding them out is unobjectionable so far as it goes. As previously stated, early awards risk assigning patents to a party that is not able to follow through with a useful application. They may reward unhelpful research activity intended to obtain a patent whose value derives overwhelmingly from holding up the activities of others. But later awards have their costs too—disincentivizing innovation for fear of invalidation and duplication of effort. Indeed, with the recent enactment of the first, general, federal law of trade secrecy,[212] the net effect of these changes may be a significant shift of incentives away from public disclosure of inventions to their secret practice in some fields.

2. The Hunt for Secondary Meaning

Concerns about premature claiming have also resulted in confusion in trademark law, particularly as it relates to the doctrine of secondary meaning in the making, discussed earlier.[213] The now-discarded secondary meaning in the making doctrine would have created something like a first-committed-searcher rule for descriptive marks. This analysis suggests two conclusions about the doctrine.

First, while rejecting the doctrine was likely the right result, it was reached for the wrong reason. In essence, opponents argued that any recognition of incipient secondary meaning was "inimical" to the purpose of trademark law.[214] To protect a party that is merely working toward acquiring secondary meaning in a mark, it was said, flies in the face of trademark law's commitment to protecting marks only when they were, in fact, marks—devices that distinguish one class of products from another. But this overlooks the difference between the two modes of establishing possession that we have explored. A first-committed-searcher rule gives a party who already began the chase priority over

[212] *See* Defend Trade Secrets Act of 2016, Pub. L. No. 114-153, 130 Stat. 376 (codified in scattered sections of 18 U.S.C.).

[213] *See supra* notes 136-37 and accompanying text.

[214] *See* RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 13 cmt. e (AM. LAW INST. 1995) ("The [secondary meaning in the making] doctrine, if taken literally, is inimical to the purpose of the secondary meaning requirement."); *see also* Laureyssens v. Idea Grp., Inc., 964 F.2d 131, 138 (2d Cir. 1992) ("Moreover, '[t]he doctrine, if taken literally, is inimical to the purpose of the secondary meaning requirement.'" (quoting RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 13 cmt. e (AM. LAW INST. 1995))); Joel S. Armstrong, *Secondary Meaning "In the Making" in Trademark Infringement Actions Under Section 43(a) of the Lanham Act*, 14 GEO. MASON L. REV. 603, 619 (1992) ("The secondary meaning in the making doctrine is therefore rejected as being inimical to the theoretical and economic underpinnings of trademark law."); Willajeanne F. McLean, *The Birth, Death, and Renaissance of the Doctrine of Secondary Meaning in the Making*, 42 AM. U. L. REV. 737, 757 (1993) ("Legal scholars opposed to the doctrine of secondary meaning in the making thought that the doctrine was generally 'inimical to the purpose of . . . secondary meaning' . . . ." (quoting RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 13 cmt. e (AM. LAW INST. 1995))).

later entrants, and possibly some rights against interference, but it need not entail full, permanent rights of exclusion without further development of the resource. A whaler in hot pursuit of a sperm whale has priority over other whalers, but he does not come to own the whale unless the chase is actually completed within a fairly compressed timeframe. Indeed, this very fact is evident in trademark law itself: while an intent-to-use application secures priority in a mark, no action for infringement can be brought until that mark has actually been used in commerce.[215] The logic of the argument used to defeat legal recognition of incipient secondary meaning would essentially deny the possibility of a first-committed-searcher standard in first possession doctrine.

Nevertheless, not recognizing a secondary meaning in the making doctrine for descriptive marks is justified in our view because of the difficulty courts would face defining who is a "committed" searcher. Importantly, there is no clear way for a court to set a time limit on a party's attempt to acquire secondary meaning. This problem is less acute for resources like whales. The timeframe at issue is relatively short—a few days at most—and the first committed whaler must be in hot pursuit, which, though certainly not free from of any ambiguity or exercise of judgment, nevertheless has a fairly apparent meaning where pursuit is not just a metaphor but a simple physical fact. The process of building a brand, by contrast, is much less straightforward. There is no clear timeframe in which to complete the process of developing secondary meaning, given differences in marketing techniques and strategies, the marketing channels appropriate to different products, the structure of the market, and the cross-section of the consuming public to be targeted. Since it would be difficult for courts to develop a standard by which to measure the commitment to following through, the secondary meaning in the making doctrine involved the risk of granting rights in a mark to a party that would not eventually develop such secondary meaning while denying these rights to a rival party who did.

Second, contrary to what the courts rejecting a secondary meaning in the making doctrine supposed, the problem is not one that is somehow conceptually intrinsic to trademark law. While courts may not be positioned to initiate such changes, the story may be different for Congress. It is possible to adopt a possession rule based on a first-committed-searcher model and grant rights earlier in the development process if a proper system of registration is established in order to provide adequate notice to others. This can be accomplished practically only by legislation. Legislation can address the proper limitations on such a system—the time window necessary to establish secondary meaning and the degree of diligence that must be shown to remain in "hot pursuit." Indeed, intent to use applications represent a legislative intervention that has just these features and can be used today by first committed adopters of descriptive marks. This institutional innovation provides both the notice to

[215] *See* 15 U.S.C. § 1114 (2012); 1-800 Contacts, Inc. v. WhenU.com, Inc., 414 F.3d 400, 412 (2d Cir. 2005) (clarifying that "use," "in commerce," and "likelihood of confusion" are three distinct elements necessary for establishing trademark infringement).

others about the committed search and a time limit for the completion of the hunt.

B. *Institutional Implications*

These reflections on existing doctrine and the general framework this Article develops point toward some larger observations about first possession in IP law. The analogy to first possession helps us to see the stakes at issue when it comes to the rules that determine the award of IP rights, but there are also important differences in the way those concerns play out that shed light on the deeper structure of both IP law and the first possession mechanism more generally.

1. Possession, Information, and Intellectual Property

Recall that first-committed-searcher rules can minimize wasteful duplication of effort and mitigate the disincentive effects that could otherwise result because of the risk that substantial investments made to claim a resource will be lost if someone else wins the contest for it. An effective first-committed-searcher rule ends the race when one of the contenders reaches a point where eventual capture is likely, and thus saves on what would otherwise be duplicative and wasteful simultaneous search and investment efforts in an ongoing race.

This advantage of the first-committed-searcher rule depends critically on the ability to give notice to others that the race has in fact ended, and indeed, on the confidence of competitors for a resource that they will be informed when and if the race ended.[216] With physical resources, it is easy to overlook the importance of this precondition. In general, it is relatively easy for one person trying to capture or develop a physical resource to learn that someone else is also doing the same. In *Pierson v. Post*, for instance, it appears to have been entirely clear to Pierson that Post was chasing the fox.[217] Similarly, it would generally be apparent to a whaler who happened upon a sperm whale that a rival was already in hot pursuit and managed to harpoon it.

The same cannot be said of intellectual property. Since firms often conduct R&D in private—indeed, often in secret—one firm could easily undertake extensive work to develop a cure for a given disease or plan an advertising campaign centering on a new trademark without knowing that a competitor up the street was doing the very same thing.[218] Telling the firms that the first committed searcher will be protected against later pursuers of the resource does

[216] Kitch, *supra* note 27, at 266 (suggesting that to create efficient system there must be communication of information to competing firms at efficient rate, such as publicly recorded ownership of patents shortly after discovery).

[217] Pierson v. Post, 3 Cai. 175, 175 (N.Y. Sup. Ct. 1805) ("Pierson, well knowing the fox was so hunted and pursued, did, in the sight of Post, to prevent his catching the same, kill and carry it off.").

[218] Kitch, *supra* note 27, at 278 ("Under a regime of trade secrecy, the competitive firm might never learn of a competitor's processes and would not learn of the technology incorporated in a new product until it was marketed.").

not do much to reduce duplicative search efforts, for example, if race participants cannot figure out if someone else's search is already underway before choosing to embark on it themselves.

Absent registration, for instance, firms planning to introduce products or services under a particular branding scheme face the very real possibility that some other business will enter the market ahead of them using a similar set of emblems. Preparing to launch is often a very costly investment that involves the choice of a mark, the preparation and timing of a pre-launch campaign, and potentially inscribing the mark on tens of thousands of items—athletic shoes, computers, soda bottles, and so on—in advance of shipment. The risk that these efforts would have to be scrapped would be a very serious problem for firms contemplating intensive marketing campaigns. While races for physical resources governed by a first-committed-searcher rule tend to be conducted under conditions of relatively symmetric information that forestalls wasteful investment, this is not generally as likely with intellectual property.

The vital role played by centralized registries in IP law responds to this difficulty by offering an independent mechanism to supply notice without relying on actions taken in the course of the race alone. In trademark law, the creation of intent-to-use applications allows a company to inform all others that it is in hot pursuit of a particular branding space.[219] And even before intent-to-use applications were introduced, courts took advantage of ordinary registration based on actual use of a mark to address information concerns, interpreting the requirement of use in commerce somewhat more leniently for registered marks than for unregistered ones. Registered marks still required some degree of use in order to prevent firms from grabbing marks without actually doing anything productive with them—failure to follow through, in other words.[220] But registered marks require less use than unregistered marks because registered marks gave notice to the world that limited commercial sales did not.[221] Trademark law's traditional use in commerce requirement is thus justified not only as a waste prevention feature, but also on informational grounds. Use in commerce puts competitors on notice that the mark is being used. As Judge Easterbrook explained in a well-known opinion, registering a mark enables parties to negotiate over the mark before one of them unwittingly "commit[s] large sums to marketing," only to discover someone else claimed it first.[222]

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[219] *See* 15 U.S.C. § 1051(b)-(d) (describing process for applying for *bona fide* intent-to-use trademark).

[220] *See* Zazu Designs v. L'Oreal, S.A., 979 F.2d 499, 503 (7th Cir. 1992) ("By insisting that firms use marks to obtain rights in them, the law prevents entrepreneurs from reserving brand names in order to make their rivals' marketing more costly.").

[221] *Id.* ("Registration modifies this system slightly, allowing slight sales plus notice in the register to substitute for substantial sales without notice.").

[222] *Id.* at 504 ("Liberality in registering marks is not problematic, because the registration gives notice to latecomers, which token use alone does not. Firms need only search the register

Public sales similarly "let others know that they should not invest resources to develop a mark similar to one already used in the trade."[223] Intent-to-use bsaed registration carried this model a step further, making it possible to move the priority point back even earlier, from slight sales to no sales at all, while at the same time requiring that substantial sales follow in relatively short order.[224] Intent-to-use applications overcome the notice problem that is so acute for first-committed-searcher rules in intellectual property, and thereby enable the law to respond more effectively to the problems associated with insisting on actual capture. Thus understood, one reason for the common law prevalence of the rule of capture versus the first-committed-searcher rule is likely informational: actual capture of physical resources is a clear informational signal, in a way "a first committed searcher" is not. But once it is possible to give notice to third parties—such as through registries—the first-committed-searcher rule becomes a more viable alternative.

A similar dynamic has happened in copyright law under a slightly different heading. In certain contexts, creators working to bring a work to the public have had to confront a serious risk that the work would be leaked to the public before its official release, in effect snatching an important aspect of the work from their hands in a manner not unlike the taking of the fox in *Pierson v. Post*. Until relatively recently, that was the case with copyrighted works. The often-critical statutory damages remedy was only available if the work infringed was already completed and registered with the copyright office. Since registration requires deposit of the work, copyright owners could not, practically speaking, register until the work was completely finished.[225] In the well-known *Harper & Row, Publishers, Inc. v. Nation Enterprises*[226] case, for example, the famous publishing house was set to release Gerald Ford's presidential memoir and sought to whet the public's appetite for the book by allowing *Time Magazine* to print a few select excerpts in advance of release.[227] Another magazine, however, managed to obtain a "purloined copy" of the memoir and rushed to publish the juiciest portions, preempting *Time*'s publication.[228] Harper & Row sued and won

before embarking on development. Had ZHD registered ZAZÚ, the parties could have negotiated before L'Oréal committed large sums to marketing.").

[223] *Id.* at 503.

[224] *See* 15 U.S.C. § 1051(b)-(d) (requiring registrant file verified statement that mark is in use in commerce within six months after allowance of intent-to-use application).

[225] 17 U.S.C. §§ 407-408 (2012) (requiring owners of copyright to deposit copies of protected work within three months after publication of work). Theoretically, copyright owners could register versions of a work periodically while they were working on it and thus avail themselves of the statutory damages remedy, but this practice would be costly, monetarily and organizationally, and not very practical.

[226] 471 U.S. 539 (1985).

[227] *Id.* at 539.

[228] *Id.* at 539-40 ("[P]etitioners, as the copyright holders, negotiated a prepublication licensing agreement with Time Magazine under which Time agreed to pay $25,000 ($12,500

a judgment of infringement, but the company was ultimately unable to recover statutory damages, making its victory rather limited. In another major prerelease infringement incident in 2003, a non-final version of the movie "Hulk" leaked to the Internet prior to official release, resulting in a harm that the studio claimed amounted to sixty-six million dollars.[229]

In 2005, following the Hulk incident, Congress amended the Copyright Act to add a provision allowing for the preregistration of "works being prepared for commercial distribution."[230] Under this new statutory framework, a party who has begun the process of generating a creative work can preregister it prior to completion, making it possible to recover statutory damages and attorney's fees for any subsequent act of infringement.[231] The preregistrant must eventually follow up and register the work once published,[232] although, surprisingly, the Copyright Act does not set a time limit for completing the work and publishing it.

Preregistration gives authors security to complete the chase without interruption by substantially increasing the sanctions on the "saucy intruder," in the language of the *Pierson v. Post* dissent.[233] It marks the limited introduction of a first-committed-searcher model. Observed patterns of use of copyright preregistration claiming are consistent with what the theory developed in this Article predicts: early claiming becomes more attractive as the "hunt" becomes more expensive, since higher costs are more likely to deter firms concerned

in advance and the balance at publication) in exchange for the right to excerpt 7,500 words from Mr. Ford's account of his pardon of former President Nixon.").

[229] *See* Troy Graham, *N.J. Man, 24, Is Sentenced for Net Bootleg of 'The Hulk,'* PHILA. INQUIRER, Sept. 27, 2003, at B1 ("Vivendi Universal Entertainment, which produced The Hulk, commissioned several studies to determine what Gonzalez's actions cost the studio. While assigning a dollar amount is an inexact science, the studio settled on about $66 million in a victim-impact statement to the federal court."). For another example, see Rebecca Pahle, *A Brief History of Movies Being Leaked Onto the Internet*, FILM JOURNAL (Dec. 5, 2014), http://www.filmjournal.com/content/brief-history-movies-being-leaked-internet [https://perma.cc/K5MN-5UJC] (illustrating multiple instances of movies being leaked before official release).

[230] *See* 17 U.S.C. § 408(f) ("[T]he Register of Copyrights shall issue regulations to establish procedures for preregistration of a work that is being prepared for commercial distribution and has not been published.").

[231] On preregistration, see Dotan Oliar & Nicholas Matich, *Copyright Preregistration: Evidence and Lessons from the First Seven Years, 2005-2012*, 55 ARIZ. L. REV. 1073, 1073 (2013) ("Preregistering a work allows copyright owners immediate access to courts and an expanded menu of remedies.").

[232] *See* 17 U.S.C. § 408(f)(3) (requiring registration no later than three months after publication of work).

[233] Pierson v. Post, 3 Cai. 175, 181 (N.Y. Sup. Ct. 1805) (Livingston, J., dissenting) ("But who would . . . pursue the windings of this wily quadruped, if . . . a saucy intruder, who had not shared in the honours or labours of the chase, were permitted to come in at the death, and bear away in triumph the object of pursuit?").

about losing their investments if someone else beats them to the punch. Movies are generally the most expensive copyrighted works to create, and, unsurprisingly, they are the category for which preregistrations is most consistently used.[234] Again, however, this earlier protection centers on a registration regime.

Copyright preregistration does not yield the first-committed-searcher rule's advantage of deterring a *bona fide* third party from entering the race, here via independent creation. But it does entail another benefit associated with this rule, namely assuring (or increasing the assurance of) the first committed searcher against a third party's interference throughout the course of the hunt, while free riding on the first pursuer's effort. True, in this context there is no danger that a third party will own the copyright rather than the creator, as the third party is an infringer and the owner's formal copyright is not in danger. However, it is of little consequence to the copyright owner by which mechanism the value of her investment went to zero. She wishes to secure the fruits of her investment, and the enhanced remedies that preregistration confers tend to do so, thus maintaining her incentives to make costly investments.

The relationship between notice considerations and the timing of exclusive rights is perhaps most apparent in the patent context. Although U.S. patent law followed a first-committed-searcher model until enactment of the AIA, its ability to shore up incentives to innovate and discourage waste in the development process was undercut by informational barriers. To return once again to the situation described in Figure 3, the pre-AIA regime tended to encourage both Tesla and Edison to carry out the entire inventive process, even though the priority rules followed a first-committed-searcher model. Unless Tesla had some way of knowing that Edison came up with the idea first and was diligently attempting to see it through to its conclusion, Tesla would often see no reason not to carry out the entire inventive process simultaneously to its end, only to discover that he was actually the second pursuer. Such surprise would not arise in first-committed-searcher rule races over physical resources: any onlooker would readily see whether a sperm whale is at large or is rather being hotly pursued.

One may wonder how such a seemingly inefficient aspect of our patent system survived for so long? It turns out that for a good part of the nineteenth century, starting with the Patent Act of 1836, patent doctrine had a mechanism that helped inventors receive timely notice of others' pursuits. By filing a so-called "patent caveat," inventors were entitled to receive notice from the patent office whenever a rival inventor filed a patent application for inventions that were

[234] *See* Oliar & Matich, *supra* note 231, at 1100 ("The film industry is both the industry most likely to benefit from preregistration and the system's most consistent commercial user.").

similar to those the caveat filer was working on.[235] Caveats were eventually abolished in 1910, and without them a first-to-invent patent system makes less sense. In their absence, a first-to-file system, such as the AIA, is preferable on notice grounds. The touchstone of priority under the AIA is disclosure, whether by filing with the patent office or by making the invention or information about it available to the public in a context where someone having skill in the relevant art might be likely to look.[236] To that extent, the AIA makes a good deal of sense.

2. Intellectual Property as Property: Flexibility and Standardization

With the AIA, patent law adopted an actual capture rule to govern the award of exclusive rights, thereby coming into alignment with the general approach taken in copyright and trademark law. But since not all whales are subject to the same rule of first possession,[237] we might well ask whether one rule should apply uniformly across either patent law or IP law more widely.

The fact that our patent system has—or had—mechanisms that awarded the right to the first committed searcher makes sense in light of the theory of possession developed here. Patents are very often extremely expensive to acquire in a way copyrights by and large are not.[238] The pharmaceutical company Amgen spends an average of $3.7 billion on R&D for every drug that it has approved; AstraZeneca spends more than four times as much.[239] The likelihood that these investments will be lost is also higher. The probability of two inventors discovering the same technology is higher than the probability of

[235] *See* John F. Duffy, *Embryonic Inventions and Embryonic Patents: Prospects, Prophesies, and* Pedis Possessio, *in* PERSPECTIVES ON COMMERCIALIZING INNOVATION 234, 263-64 (F. Scott Kieff & Troy A. Paredes eds., 2011) ("By filing a caveat, a party was entitled to notice from the Patent Office if any other party filed a patent application on the same subject matter described in the caveat.").

[236] *See* 35 U.S.C. § 112 (2012) (detailing disclosure requirements of patent application); *see also id.* § 102(b)(1)(A) (providing priority through grace period exceptions for disclosures by applicant or third party who received disclosed information from applicant).

[237] *Compare* Ellickson, *supra* note 45, at 90-94 (describing "iron-holds-the-whale" rule wherein whale is owned by first party to attach harpoon to whale), *with* Swift v. Gifford, 23 F. Cas. 558, 559-60 (D. Mass. 1872) (comparing different standards for rule of capture of whales generally with that of the sperm whale species).

[238] The cost of producing copyrighted works is not as obvious as it might seem. Subject to certain caveats, across-the-board increases in the compensation to producers of creative works should in principle always result in greater creative output, though the costs, including both access and opportunity costs, may not be worth it.

[239] *See* DiMasi, *supra* note 131, at 151 ("The estimated average out-of-pocket cost per new drug is US$ 403 million (2000 dollars)."); Matthew Herper, *The Truly Staggering Cost of Inventing New Drugs*, FORBES MAGAZINE (Feb. 10, 2012, 7:41 AM), https://www.forbes.com/sites/matthewherper/2012/02/10/the-truly-staggering-cost-of-inventing-new-drugs/#704dda74a948 [https://perma.cc/E85P-BBE7] (presenting research spending per new drug for several major pharmaceutical companies).

two creators generating the same creative work, since the inventive solution is dictated and constrained by real-world functional considerations. It seems far more probable that two firms would both invent acetylsalicylic acid (aspirin) than that two painters would both paint Starry Night.

Inventors also face a more serious threat from products and ideas similar to their own. Consumers will often be indifferent as between two technologies that do the same thing by different means, treating one as a substitute for the other. If George decides to purchase a gas stove for his kitchen, he is unlikely to purchase an electric stove too; if he takes Zocor to reduce his cholesterol, he is unlikely to take Lipitor as well. By contrast, demand for creative works is less likely to be mutually exclusive. A person might want to see all the superhero movies Hollywood can produce in a year. Indeed, rather than suppress demand, one superhero movie may stimulate demand for others.

For all these reasons, we would generally expect inventors to need greater protection from competitors during the process of generating their intellectual goods than creators of artistic works. Simply put, developing new pharmaceuticals often costs hundreds of millions of dollars,[240] and firms will often be reluctant to proceed unless they have sufficient confidence they will reap the rewards if those investments do indeed produce results.[241] In copyright, ownership and priority are generally determined by the moment of capture, fixation of particular expression in a physical copy.[242] Translating to the terminology of patent law, this is essentially the point where creative abstractions are reduced to actual practice. On average, the costs of copyrighted works are less than those of patents, and the claiming moment is later, as the theory this Article proposes would suggest.

Yet not all patents and not all copyrights are alike. While some patents are extremely expensive to procure, not all of them are so. And some creative works—think of Hollywood blockbusters—require huge investments. There can be substantial variability in costs across different kinds of IP products, and some patents may look more like the typical copyright, and some copyrights like the more investment-intensive patents. Software or business method patents are probably less costly to come up with than the average pharmaceutical patent. Movies or software are more expensive to produce than the average haiku.

That not all whales are alike, and that different ones are subject to different doctrines of first possession, suggests that perhaps a degree of differentiation

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[240] *See* DiMasi, *supra* note 131, at 151 ("Capitalizing out-of-pocket costs to the point of marketing approval at a real discount rate of 11% yields a total pre-approval cost estimate of US$ 802 million (2000 dollars)."); Herper, *supra* note 239 ("The average drug developed by a major pharmaceutical company costs at least $4 billion, and it can be as much as $11 billion.").

[241] *See* Duffy, *supra* note 15, at 469-75 (providing numerical calculations to show when theoretical firms may refrain from investment due to uncertain return).

[242] 17 U.S.C. § 302 (2012) ("Copyright in a work . . . subsists from its creation and . . . endures for a term consisting of the life of the author and 70 years after the author's death.").

may be appropriate also with respect to particular doctrines that govern the claiming of any one type of IP right. Given that the greater levels of investment offer more reason to adopt early claiming, the balance of considerations may come out differently in different areas within patent, copyright, and trademark law. Some differentiation can be accommodated within existing doctrinal frameworks simply by providing an alternative route for earlier claiming in cases where the chase is costly or protracted, as with trademark intent-to-use applications and copyright preregistration. But, subject to concerns about administrability and any costs of diminished standardization, the law should probably go further. It is unclear, for instance, that a first-to-file rule is superior to first-to-invent across all patent types as a matter of first best.[243] In contexts like pharmaceuticals with high upfront development costs, earlier claiming should be offered. Conversely, in areas where the danger of squatting or misallocation is especially significant—as is likely the case with many business method patents for instance—the award of rights should generally be delayed.

Admittedly, courts generally cannot simply propound different doctrines for different subject-matters within the same branch of IP law. Often, such changes can only be brought about legislatively. But this discussion of the treatment of possession questions both for physical and intellectual property suggests there is room for courts to consider ways in which the claiming of IP rights can be more closely tailored to incorporate the concerns identified here. When the USPTO or a trial court evaluates whether a patent satisfies the utility requirement, for instance, the cost of developing the type of invention at issue is an appropriate consideration. Insofar as the utility requirement shapes the nature of possession in patent law, it should reflect the underlying nature of possession rules and tilt toward later awards of rights when the costs of developing a technology are low and earlier awards of rights when the cost of developing a technology are high.

C. *Theoretical Implications*

1. On Defining IP Goods

This discussion of claiming rules is, for the most part, absolute. We assumed that there was one clear rule for the "capture" of IP rights and, by extension, a relatively clear sense of when the chase was underway that would culminate in capture. This intuition stems from our physical property antecedents. Whatever room for debate there may be at the margins, it is fairly obvious when a person does and does not succeed in capturing a fox. We certainly have a pretty good idea what a fox is, and a good intuition about what it means to actually capture a fox versus merely to chase it. But IP law helps us see that these notions can be situated within a wider continuum of development. What ultimately looks like

[243] For these purposes, we set aside the benefits of international harmonization, which may outweigh the value of any departure from a first-to-file regime.

actual capture, as opposed to simply some important step along the way, is a function of how the legal system defines the thing to be captured. In IP law, the nature of the thing itself is not given but is a creature of law. The result is both greater uncertainty and greater flexibility.[244] Intellectual property shows that the terms "committed search" or "actual capture" are not inevitable names for concrete moments in a resource's chase chronology, but rather mere names for early or late points in time along that chronology, and that it is possible for the legal system to work with more than just two points along this continuum.

For example, since 1976, a creative work has been protected by federal copyright law as soon as it is fixed in a physical copy and need not also be published, as prior federal copyright statutes required.[245] If we think of the Copyright Act as a system that protects physical embodiments of completed works, using fixation to define possession looks like a rule of capture. If, however, we think of federal copyright law as a system centered on publication, granting copyrights based on fixation looks less like a rule of capture and more like a first-committed-searcher rule. In trademark law, similarly, use in commerce looks like a rule of capture if trademark law is conceived as simply the creation of a brand name, but it looks like a first-committed-searcher rule if we think the ultimate object of trademark law is a successful, well known, and highly valued mark, like the famous marks protected against dilution.

In IP law, more is up for grabs than with physical property. The "things" of IP law used to organize IP rights are more variable than those of physical property.[246] This is part of what compounds the difficulties of notice and clear conceptual thinking in intellectual property, which can be ameliorated somewhat through devices like rights registries. But it also provides for greater flexibility and tailoring, helping to facilitate the sometimes sliding-scale quality of IP protection. Trademarks receive some protection upon the registration of mere intent to use. Then greater protection is given after use in commerce is shown and, where required, the acquisition of secondary meaning, but more protection

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[244] *Cf.* Coll. Sav. Bank v. Fla. Prepaid Postsecondary Educ. Expense Bd., 527 U.S. 666, 675 (1999) (considering but rejecting various candidates for "property" created by Lanham Act false advertising provisions).

[245] *See* 17 U.S.C. § 302(a) (creating copyright in work at time of creation). Common law principles offered some protection for unpublished works under state law. *See* Stanley v. Columbia Broad. Sys., Inc., 221 P.2d 73, 78 (Cal. 1950) (en banc) ("[C]ommon law prohibits any kind of unauthorized interference with, or use of, an unpublished work on the ground of an exclusive property right, and the common-law right . . . exist[s] until lost or terminated by the voluntary act of the owner . . . .").

[246] *See* Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1755 (2007) ("'Invention space' and original expressions do not come pre-carved into things. That is, we are implicitly treating an invention as a thing when the interest in its use—the various activities—are described at a high level of generality not tied directly to the activity itself.").

if they are "strong" and still more if they are "famous."[247] Copyright functions more obviously like a system of temporal priority for works that are widely circulated since copying is more easily shown when a work is well known.[248] Patent law, too, has doctrines that afford greater protection to inventions that are more developed. For instance, while commercialization is not required for a patent to issue, commercial success is an important factor in analyzing whether a patent satisfies the all-important requirement of non-obviousness.[249] Likewise, pioneer patents generally receive stronger protection than those covering improvements.[250]

In the final analysis, IP law itself can be characterized as a kind of first-committed-searcher rule writ large, at least where the rights at issue are understood as essentially commercial in character. Patents and copyrights grant inventors and authors a head start over others in capturing market share and building customer goodwill. This is no small thing—indeed, it is one of the ironies of IP law that a patent-holder's commercial success can be so complete that it results in the destruction of its *trademark* rights by causing the patent-holder's trademark to become generic.[251] And trademark law itself even more clearly aligns with this conception of intellectual property as a kind of limited protection in the process of acquiring property through actual commercial exchange. Trademark law requires active use of a mark,[252] renewal of registration,[253] and the ongoing payment of fees.[254] Though trademark law is not

[247] *See, e.g.*, AMF, Inc., v. Sleekcraft Boats, 599 F.2d 341, 349 (9th Cir. 1979) (setting forth test for trademark infringement in which infringement depends, inter alia, on strength of mark).

[248] *See supra* notes 163-67 and accompanying text (describing trademark dilution protection requiring widespread brand recognition).

[249] *See* Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966) (noting commercial success as "indicia of obviousness or nonobviousness"); MPEP § 2141(II) (9th ed. Rev. 3, Jan. 2018) (noting that examiners should consider secondary considerations put forth in *Graham v. John Deere* including "commercial success, long felt but unsolved needs, [and] failure of others").

[250] *See* Wright Co. v. Herring-Curtiss Co., 211 F. 654, 655 (2d Cir. 1914) (endorsing Judge Learned Hand's lower court reasoning giving liberal interpretation for pioneering inventions).

[251] *See, e.g.*, Murphy Door Bed Co. v. Interior Sleep Sys., Inc., 874 F.2d 95, 97 (2d Cir. 1989) ("We hold that 'Murphy bed' is a generic term, having been appropriated by the public to designate generally a type of bed. Consequently, defendants could not have infringed on plaintiff's trademark alleged to be Murphy bed . . . .").

[252] Abandonment is presumed after three years of non-use. *See* Lanham Act § 45, 15 U.S.C. § 1127 (2012).

[253] *See id.* § 1059(a) ("[E]ach registration may be renewed for periods of 10 years at the end of each successive 10-year period following the date of registration upon payment of the prescribed fee and the filing of a written application, in such form as may be prescribed by the Director.").

[254] *See id.*; U.S. PATENT & TRADEMARK OFFICE, FEE SCHEDULE (2018), https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-

subject to fixed terms of duration in the manner of patent and copyright law, it is even more clearly limited by a kind of hot pursuit requirement. Its origins in unfair competition law illustrate its core purpose—to secure to a firm that has managed to establish goodwill in the mind of a consumer an exclusive right to capitalize upon it, in a quest for the ultimate good to be captured: the consumer's business.[255]

2. Divided Possession Rules

The first possession discussion in the literature has often been conducted under an implicit assumption that largely identical pursuers will race to own a resource, and that the only task left for the law is to determine the optimal timing of possession. While true in many contexts, sometimes efficiency dictates the division of labor among two or more pursuers, where each is uniquely positioned to conduct one crucial phase in the resource's hunt or development. In such cases, a different type of original acquisition rule might be called for, one which would coordinate the actions of several unrelated pursuers, incentivizing each to conduct one crucial step along the pursuit's chronology.

Indeed, Ellickson's seminal treatment of whalers' norms discusses, if at lesser extent, a rule of this sort in fisheries where the value of a whale's carcass would be "split between the first harpooner and the ultimate seizer," in some cases on a fifty/fifty basis. The efficiency rationale suggested to support this rule was one of division of labor: this rule would incentivize the first harpooner to meet a school of whales (characteristic to those fisheries) to focus on striking as many of them as quickly as possible before they dissipated, while, at the same time, incentivizing other whalers to chase and capture the many dissipating encumbered whales.[256] This rule would arguably result in a greater yield than either the first-committed-searcher rule or the rule of capture, which would focus the first whaler's attention on completing the hunt of one whale at a time, start to finish.

The possiblity of divided awards is not foreign to IP law. Most notably, the notion of "blocking patents" in patent law can be thought of as splitting rights over a larger inventive space between a first-generation inventor and a follow-on improver. Each obtains a right to control aspects of the improved invention, such that both need to come to terms in order for the improvement to be used. The doctrine incentivizes each to perform important tasks in the invention

schedule#TM%20Process%20Fee [https://perma.cc/P4TW-XHLZ] (defining various fees for trademark processing at the USPTO, including trademark renewal fees).

[255] *See* McKenna, *supra* note 168, at 1840-41 ("[T]rademark law was not traditionally intended to protect consumers. Instead, trademark law, like all unfair competition law, sought to protect producers from illegitimate diversions of their trade by competitors.").

[256] *See* Ellickson, *supra* note 45, at 92-93.

chronology that they are uniquely capable of performing.[257] Abstracting away from particular detail, property and IP doctrine can form original acquisition rules that create entitlements, which are in some sense shared among several parties in ways that induce them to move cooperatively along the chronology of a resource's pursuit and development.

One may wonder why explicit reliance on divided entitlements is not undertaken more widely in IP law. Part of the reason may have to do with the difficulty of obtaining the information needed to assess relative contributions of different parties and their unique capabilities in various settings. One can also view patent and copyright laws' limited duration—a feature absent from common-law property—as a primary mechanism to coordinate between different generations of authors and inventors, incentivizing each to come forth with their unique contributions to the advancement of the arts and sciences.

CONCLUSION

Long before the legal academy became interested in whaling norms, Herman Melville took up the subject of first possession, devoting an entire chapter of *Moby-Dick* to the fast-fish/loose-fish doctrine.[258] The world, Melville concluded, is full of fast-fish—of people and places captured and controlled by others. Yet, he continued, even more plentiful are the world's loose fish—all those materials as yet free but available for the taking by whomever can capture them first. He asked, "What are men's minds and opinions but Loose-Fish?"[259] "What is the great globe itself but a Loose-Fish? And what are you, reader, but a Loose-Fish and a Fast-Fish, too?"[260]

Ultimately, possession is not about mere law any more than *Moby-Dick* is about mere whales, especially when it comes to intellectual property. Once a relatively obscure set of fairly technical disciplines, Intellectual property has proliferated over the last century to occupy a central position in the law, both within the United States and globally. Its domain is human ingenuity and the substratum of much contemporary life—technology, communication, entertainment, and commerce. What chunks of these are free for capture, and what it takes to capture them, are critical in determining the direction and composition of society. These grand themes, however, still depend on the particulars of legal doctrine and the conceptual framework that shapes and is shaped by them. The sound development of intellectual property's possessory doctrines requires careful attention to detail and a systematic understanding of

[257] *See* Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75, 81 (1994) ("Blocking patents thus represent an interesting property rights institution that balances incentives for pioneers with incentives for independent inventors to push pioneering technology forward.").

[258] *See* MELVILLE, *supra* note 46, at 329.

[259] *Id.* at 1219.

[260] *Id.*

the considerations that are at play. Simply put, we cannot get it right if we do not understand what is going on.

This Article set forth an account of the central features that drive first possession in the law, describing both the forms first possession rules take and the functions different approaches perform. IP law is subject to the same basic set of trade-offs that shape traditional first possession doctrines—particularly the danger of failure to complete the chase, on the one hand, and the risk of wasteful duplication and reluctance to compete due to fear of lost investments, on the other. At the same time, however, the balance between these concerns differs in important respects, as do the institutional possibilities IP law affords. Intellectual property faces particularly acute problems of asymmetric information, but it also allows for greater flexibility through the use of centralized registries and a wider array of possibilities in defining the "things" that can be protected. In some ways, the law sensibly responds to these differences between the tangible and the intangible, but often imperfectly and without a clear understanding of the underlying stakes. By confronting these issues in a systematic and integrated way, this Article set out a useful platform from which to survey the wider horizon of intellectual property and better chart the course that lies ahead. The need for a clear grasp of the fundamentals will prove critical in the decades to come, for intellectual property is still in its relative infancy and if, as Melville might say, it is in some respects a fast-fish, but in others it is very much a loose-fish too.