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THE BASIC STRUCTURE OF INTELLECTUAL PROPERTY LAW

RICHARD A. EPSTEIN

HOOVER INSTITUTION, NEW YORK UNIVERSITY, AND UNIVERSITY OF CHICAGO

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Rochelle C Dreyfuss & Justine Pila (eds)

The Oxford Handbook of Intellectual Property Law

Richard A Epstein

The Basic Structure of Intellectual Property Law

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1. Introduction: A Map of the Intellectual Property Universe

Intellectual Property (IP) law contains at least six major branches: patents, copyright, trademarks (including trade names), rights of publicity, misappropriation, and trade secrets. Each branch has its own separate history that rests on a complex mixture of common law principles augmented by statutory and administrative materials. Each embodies delicate tradeoffs on what materials should be treated as private property and what materials belong in the public domain. Scholars of IP law today fall into two main camps: those who accept the model of strong property rights,¹ and those who prefer a

¹ See, e.g., Jonathan M. Barnett, *From Patent Thickets to Patent Networks: The Legal Infrastructure of the Digital Economy*, 55 JURIMETRICS J. 1 (2014) (using the field of information and community technology to demonstrate that strong property rights do not inhibit innovation); F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697 (2001) (arguing that strong property rights are essential to avoid underusing technology); Richard A. Epstein, F. Scott Kieff & Daniel F. Spulber, *The FTC, IP and SSOs: Government Hold-Up Replacing Private*

larger public domain out of concern that patent and other IP ‘thickets’ will develop and block technological innovation, competition and creativity.² This wide-ranging conflict manifests itself in discussions of both the scope of IP protection and the choice of remedies in the event of infringement. For example, property-oriented theorists tend to prefer stronger injunctions and stiffer measures of damages than public domain theorists.³

Any account of the basic architecture of IP law must address these manifold conflicts and complexities. I believe this task is best done by comparing and contrasting IP rules with the rules governing the ownership of natural resources, most notably land, air, water, chattels, and animals. Most IP experts treat IP as a self-contained system, separate from these other property systems.⁴ That distinction makes some scholars reluctant to apply the word ‘property’ to various IP rights. In contrast, these comparisons offer the best way to integrate the divergent threads of IP rights (IPRs).⁵

In order to drive the comparison home, I shall propose a thumbnail outline of property rights in natural resources as a template for IP law. The law governing both starts by asking why some resources are held in common, i.e., with universal access, and some are made the subject of private (exclusionary) rights. In equilibrium, both common ownership and private rights are needed: rightly understood, common ownership does not

Coordination, 8(1) J. COMPETITION L. & ECON. 1 (2012) (demonstrating the benefits of strong property rights through the lens of standard-setting organizations); Richard A. Epstein & Bruce N. Kuhlik, *Is There a Biomedical Anticommons?*, 27 REGULATION 54 (Summer 2004) (arguing that strong property rights promote innovation in the biomedical field); Richard A. Epstein, *Heller’s Gridlock Economy In Perspective: Why There is Too Little, Not Too Much, Private Property*, 53 ARIZ. L. REV. 51 (2011).

² MICHAEL A. HELLER, *THE GRIDLOCK ECONOMY: HOW TOO MUCH OWNERSHIP WRECKS MARKETS, STOPS INNOVATION, AND COSTS LIVES* (2008) (arguing that strong IP protections lead to the ‘tragedy of the anticommons’); Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998). For the most widely discussed contribution, see Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCI. 698 (1998).

³ For a discussion of available remedies, see *infra* at 33.

⁴ See, e.g., Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEXAS L. REV. 1991 (2007); TOM W. BELL, *INTELLECTUAL PRIVILEGE: COPYRIGHT, COMMON LAW, AND THE COMMON GOOD* (2014); JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS AND LAWYERS PUT INNOVATORS AT RISK* (2008). For a powerful dissection, see David L. Schwartz & Jay P. Kesan, *Analyzing the Role of Non-Practicing Entities in the Patent System*, 99 CORNELL L. REV. 425 (2014).

⁵ For discussion, see Richard A. Epstein, *The Disintegration of Intellectual Property? A Classical Liberal Response to Premature Obituary*, 62 STAN. L. REV. 455, 463–465, 497–520 (2010). [Hereinafter, Epstein, Obituary]; Richard A. Epstein, *What Is So Special About Intangible Property? The Case for Intelligent Carryovers*, in *COMPETITION POLICY AND PATENT LAW UNDER UNCERTAINTY: REGULATING INNOVATION* 42 (G. Manne & J. Wright, eds. Cambridge U.P. 2011) [hereinafter, Epstein, Carryovers].

leave a rights vacuum that private rights must fill.⁶ For those things, however, that *can* support private rights, it is necessary to trace out the rules governing the acquisition of those rights, by: occupation or creation of the individual subject matter to which they attach; or transfer (by sale, lease or license). It is also necessary to determine the protection they confer and the consequences (eg, damages and injunctions) of their trespass or infringement. Once these rules are in place, the next step is determining how the state may take or regulate both physical property and IP in civil and common law systems.

2. Common Versus Private Property

2.1 Physical Resources

The earliest systematic treatment of property rights in Justinian's Institutes starts with the key distinction between common and private property under the *ius gentium*, or the law common to all peoples. The air, seas, and consequently the beach are treated as *res commune*, that is, open to all.⁷ Land, chattels, and animals are known as *res nullius*, or things owned by no one, which anyone could reduce to private ownership by capture, 'for natural reason gives to the first occupant that which had no previous owner.'⁸ Why this division of resources?⁹ The first cut into the problem stems from the simple observation that the world could not function if the rules governing private and common resources were reversed, so that anyone could reduce air, rivers, and beaches to private ownership, even as land, chattels, and animals had to remain in the commons, negating the prospects of agriculture or development.

More theoretically, it is critical to identify two major threats to social cohesion that pull in opposite directions: conflict (including aggression) and holdouts. If natural resources such as land could not be owned, people would fight over the extent of their individual uses, each incompatible with the other. Given that uncertainty, no one would cultivate or develop any resource if others were free to take or use his work product at their will and pleasure. Early hunter-gatherer systems only developed permanent and exclusive property rights in chattels and animals that they took with them wherever they went. But before the agricultural revolution, there were no property rights in land because, quite literally, no one had any reason to lay down roots in the soil. Once heavy investments had to be made in land, exclusive property rights were necessary to incentivize high levels of improvement or cultivation. While the distribution rules could be more flexible among family and clan members, they had to provide strong protection against outsiders. That

⁶ See generally, Carol Rose, *The Comedy of the Commons: Custom, Commerce and Inherently Public Property*, 53 U. CHI. L. REV. 711 (1986). The other position is, at least implicitly, adopted by Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967).

⁷ Justinian's Institutes: Book II, Title I, 1.

⁸ Id. at II, 12.12.

⁹ See, Richard A. Epstein, *On the Optimal Mix of Private and Common Property*, 11 SOC. PHIL. & POL. (No. 2) 17 (1994).

systematic exclusion of others from land necessarily comes with a cost of limiting the freedom of access of others, which led Proudhon to proclaim that ‘all Property is theft.’¹⁰ At this point, the trade-offs become clear. Any lack of cooperation between private property owners could lead to major holdout problems, which occur when the owner of some particular asset uses his exclusive rights to block gainful transactions by others.

The tacit empirical judgment for land, chattels, and animals is that the proper baseline is exclusive occupation, which at the margins has to be modified to minimize holdout risk without unduly crimping incentives to cultivate and develop. For example, the law allows people to enter private property in cases of serious necessity¹¹ or to gather information necessary to resolve boundary disputes.¹² In dealing with air, water, and the beaches, the relative risks are reversed. Access to these common resources is the first priority for communication and transportation. In the early stages of civilization, these open access regimes did not require much by way of investment to maintain the collective asset. Now basic (empirical) judgment rates the holdout risk from blocking a river or diverting a stream as far greater than any development loss that stems from holding these elements in common. So now the initial baseline veers sharply toward an open-access regime. But that regime too must be modified to dredge rivers and mark navigation routes. Hence government preserves open access for all by placing these assets into public trust, using either fees or taxes to maintain the facility.¹³ Each property rights system therefore is efficient in its own domain. The basic theorem behind all property systems can thus be summarized in this proposition: *minimize* the sum of social losses attributable to both aggression (including nuisances) and holdout problems.

2.2 Intellectual Property Resources

The same basic calculations apply to intellectual property. The six IP fields mentioned above all presuppose an intellectual commons around which individuals may secure private rights, *none* of which undercut the intellectual commons itself, which remains open for use by all. Here are some representative statements about the basic position. ‘A fundamental principle common to all genres of intellectual property is that they do not carry any exclusive right in mere abstract ideas. Rather, their exclusivity touches only the concrete, tangible, or physical embodiment of an abstraction.’¹⁴ Similarly ‘[t]he laws of

¹⁰ P. J. PROUDHON, WHAT IS PROPERTY? AN INQUIRY INTO THE PRINCIPLES OF RIGHT AND OF GOVERNMENT 11–12 (B.R. Tucker trans. 1966) (Paris 1840).

¹¹ *See, e.g.*, The Tithe Case, Y.B. Trin. 21 Hen. 7, f. 26, 27 (taking property for protection of King and Country); Mouse’s Case, 77 Eng. Rep. 1341 (K.B. 1609) (general average contribution in admiralty); Vincent v. Lake Erie Transportation Co., 124 N.W. 221 (Minn. 1910) (private necessity, subject to duty of just compensation).

¹² Dougherty v. Stepp, 18 N. C. 371 (1835).

¹³ Illinois Central R.R. Co. v. Illinois, 146 US 387 (1892). For the complexities, *see* Joseph D. Kearney & Thomas W. Merrill, *The Origins of the American Public Trust Doctrine: What Really Happened in Illinois Central*, 71 U. CHI. L. REV. 799 (2004).

¹⁴ P.D. Rosenberg, 1 Patent Law Fundamentals § 1.13 (2d ed. 2016).

nature, physical phenomena, and abstract ideas have been held not patentable.’¹⁵ The same insight applies to copyright: ‘Copyright protection shall extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.’¹⁶ The explanation for this insistence on a robust common domain does not arise from the technical inability to give individuals exclusive use of these regimes. Note how this logic applies to nature resources. It is surely possible to allow any one person to dam up a river and divert its contents for himself. But that physical possibility is rejected because of its systematic bad social consequences. The same is true in general with abstract ideas and laws of nature. It is possible to allow only one person the exclusive right to use a law of nature in scientific work, but again the results are so ghastly that it is easy to say that these results are somehow practically impossible when they are not. Modern communications and research would grind to a halt if some modern Pythagoras could charge each mathematician, scientist and student a fee for using his theorem. The number of paid transactions would be astronomical; the fees per transaction would necessarily be low, as each researcher would owe compensation to literally thousands of others for their work; the administrative and monitoring burden would be huge, for no pooling arrangement could keep up with the deluge. Therefore, just as with natural resources, it is the practical, or economic nightmare of any regime of exclusive use that drives every legal system to treating these as common domain assets.

The welfare implications of the intellectual commons are strongly positive, given that each person receives *implicit in-kind* compensation by his ability to make use of the general ideas previously created by others for adding his own ideas to the stock of public assets.¹⁷ In some cases, however, the risk may remain that these reciprocal benefits might prove insufficient to create the appropriate level of investment for basic research. Private parties can narrow the gap, as they do, by giving direct support for basic research up to the proof of principle, and offering prizes and rewards to the first person who solves some theoretical problem of great importance.¹⁸

¹⁵ *Diamond v. Chakrabarty*, 447 US 303, 309 (1980). *See generally*, Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L. J. 287 (1988).

¹⁶ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization (hereinafter WTO Agreement), Annex 1C, Legal Instruments--Results of the Uruguay Round vol. 31 (TRIPS); 33 I.L.M. 81, 9(2) (1994).

¹⁷ For discussion of implicit in-kind compensation generally, *see* RICHARD A. EPSTEIN, *TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAN* 195–215 (1985). For its specific application to copyright, and by extension to other fields of IP, *see* William M. Landes & Richard A Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989).

¹⁸ Vannevar Bush, Director of the Office of Scientific Research and Development, *Science, the Endless Frontier* (1945), available at <https://www.nsf.gov/od/lpa/nsf50/vbush1945.htm> (favoring public support for basic research and a strong patent system for commercialization).

Yet the limitations of both methods are clear. Basic research institutes—think the National Institutes of Science—are not equipped for commercialization. Prizes are not sufficient. Many prizes are given for lifetime achievements, years after some particular breakthrough. But even targeted prizes, much like the award authorized from the Longitude Act of 1714 for a technique to determine longitude,¹⁹ offer only a small fraction of revenues that could be derived from a breakthrough patent or copyright. Furthermore, a prize necessarily goes only to the first player in a given field, even when a subsequent rival product turns out to be superior. In contrast, patents and copyrights spur global competition by rewarding second-generation inventors and writers whose creations turn out to be more valuable than those of the first generation innovator. Indeed, any judgment made by an impartial market is likely to be superior to that made by some learned panel that must calculate the value of the technology when it is first introduced, and therefore necessarily lacks the detailed information that accrues over time to downstream users.

3. The Acquisition of Exclusive Rights

The foundation of exclusive rights, which starts with physical assets and carries over to various forms of IP, is the subject of an inconclusive debate. The focal point for this debate is often the natural law defense of private property that John Locke offers in Chapter Five of *The Second Treatise on Government*, which many modern scholars have claimed can be carried over to IP.²⁰ Still others claim that the constitutional protection of patents and copyrights reflects a more self-conscious instrumental and utilitarian conception.²¹ As the U.S. Supreme Court noted long ago: ‘The limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly.’²² According to one version of the utilitarian position, the incentive to create and innovate is severely cramped in an open commons. At common law, all individuals had the right to sell the goods that they produced. The addition of the patent excluded others from the exercise of that common law right, leaving the patentee as the sole vendor during the period of patent protection.

The next question is whether these exclusive rights advance social welfare. The answer is a mixed verdict. In some instances, they confer monopoly power on the holder of the

¹⁹ See, DAVA SOBEL, *LONGITUDE: THE TRUE STORY OF A LONE GENIUS WHO SOLVED THE GREATEST SCIENTIFIC PROBLEM OF HIS TIME* (1995).

²⁰ See Hughes, *supra* n. 15, at 296–330 (surveying the theory of Locke and his supporters), RANDOLPH J. MAY & SETH L. COOPER, *THE CONSTITUTIONAL FOUNDATIONS OF INTELLECTUAL PROPERTY*, 15–28 (2015).

²¹ See, e.g., CHRISTINE MACLEOD, *INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM, 1660–1800*, 51, 53 (1988); EDWARD C. WALTERSCHEID, *THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE*, 226–28 (noting that the natural rights tradition took greater hold in the United States and France than in England).

²² *Kendall v. Winsor*, 62 US 322, 327–28 (1858).

right, but, in other instances, they do not. The creation of patents for new inventions and copyrights for new writings differs profoundly from some historic use of patents, under which the Crown offered exclusive rights to importers of products that had already been invented.²³ In some of these historical cases, the patentee was under an obligation to market the good and to train English apprentices in its mastery, but in other cases the patents became a tool of political patronage for the Crown.²⁴ Although the phrase ‘to promote the Progress of Science and useful Arts’²⁵ in the U.S. Constitution does not on its own exclude patents for importation, it does appear to preclude their use as either a source of payment for past services on the one hand, or as a naked monopoly with no correlative public benefits on the other.

This natural law versus utilitarianism debate, moreover, is not confined to the American constitutional tradition, but arises wherever the scope of IP protection is debated. One reason why this debate has proved so inconclusive is that it becomes hard in practice to distinguish natural rights theories from utilitarian ones. To see why, recall that Jeremy Bentham claimed that ‘natural rights are nonsense on stilts.’²⁶ Ironically, however, his utilitarian theory of the possessory rights conferred is virtually identical to the natural law theories that William Blackstone put forward in his *Commentaries*. Both men recognized that the notion of ‘possession’ would be insufficient in ordinary life if it only protected people while they actually held things in their hands. Instead, both writers accepted the obvious convenience of adopting the Roman law convention that the party who acquired possession kept it (as it is sometimes said, as ‘a matter of law’) until it was either abandoned or taken away.²⁷ Thus Blackstone wrote:

[N]o man would be at the trouble to provide either [shelter or raiments], so long as he had only an usufructuary property in them, which was to cease the instant that he quitted possession; if, as soon as he walked out of his tent, or pulled off his garment, the next stranger who came by would have a right to inhabit the one, and to wear the other.²⁸

²³ See Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550-1800*, 52 HASTINGS L. J. 1255, 1259–64 (2001).

²⁴ *Id.* at 1265. For an earlier, more concise version of the argument, see Giles S. Rich, *The Relation between Patent Practices and the Anti-Monopoly Laws*, 24 J. PATENT OFFICE SOCIETY, 85, 92–93 (1942).

²⁵ US Const. art. I, § 8, cl. 8.

²⁶ 2 JEREMY BENTHAM, *Anarchical Fallacies*, in THE WORKS OF JEREMY BENTHAM 489, 491 (JOHN BOWRING ED., 1843).

²⁷ Digest, 6.3.9: “For it is settled that we remain in possession [of a thing] until either we voluntarily abandon it or are ejected by force.”

²⁸ 2 WILLIAM BLACKSTONE, COMMENTARIES 4.

Bentham uses exactly the same argument to explain why the hunter who captures a deer is entitled to keep it even when he leaves his cave in order to perform some other task.²⁹ Legal systems that tie protection of property to possession need the broader definition of possession, for otherwise every dispute would require that the successful claimant go back to the original title in order to beat back the claim of every rival.³⁰ To avoid that senseless waste of resources, every legal system posits that once possession is acquired, it is kept until it is lost by consent or abandonment. The differences between the natural law and utilitarian theory on this and so many points are so small that operationally it becomes difficult to distinguish between them.³¹

Within this framework, the possession of physical things—land, chattels, and animals—in both common law and civil systems was acquired by *occupatio*, or occupation; no further use or development was required to perfect title. That possession involves two distinct elements. First, the initial possessor must distinguish himself from everyone else to become the sole owner. Second, the initial possessor has to give notice of that relationship to the rest of the world to preserve priority. The method of giving notice differs by asset class. For land, it is usually necessary to mark the boundaries in some distinct fashion, of which the most powerful (and most expensive) is to fence it in. For chattels, it is to first take them in hand, usually followed by moving them to a place of safety. For animals, it is to capture, control, and sometimes brand them. In each setting, the key element is that the legal system demands *as little as possible* from the initial possessor owner to separate his claim from that of others’.

The philosopher most closely aligned with the protection of private property is John Locke. But at no point does he use the word “occupation” to describe how unowned things are reduced to private ownership. That omission has plunged the philosophical literature into deep confusion about Locke’s views on the acquisition of private rights. The matter requires some close attention. Initially, it is always the case that no act is required to obtain ownership of one’s own person or labor, for each person from birth is entitled to both in the original position: “Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this no body has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his.”³² The point itself has an obvious efficiency justification. If each person does not own his or her own labor, then someone else must, at which point a fatal imbalance is created: no one will labor if the gains from that activity are given as of right to a stranger, even if they will share within families or clans. The legal system thus has to work to protect against the theft of labor, as it does for example when the law offers

²⁹ JEREMY BENTHAM & ETIENNE DUMONT, *THEORY OF LEGISLATION* 139 (R. Hildreth trans., 1840). Locke uses the same example in Locke, *The Second Treatise of Government*, ch. 5 ¶30.

³⁰ On the relationship between possession and ownership, see F. W. MAITLAND, *THE FORMS OF ACTION AT COMMON LAW* 27–36 (A.H. Chaytor & W.J. Whittaker 1936).

³¹ For discussion, see Richard A. Epstein, *The Utilitarian Foundations of Natural Law*, 12 *HARV. J. OF LAW & PUBLIC POLICY* 713 (1989).

³² John Locke, *The Second Treatise on Government*, Ch. 5, Of Property, ¶27.

people protection against the theft of honest services.³³ This rule creates the right incentives because even the smallest expenditure of labor gives its owner full protection of the benefits so produced. Picasso keeps the high value of a sketch that it takes him only minutes to produce.

Next, the law has to answer a second question: how does any person claim ownership of any external thing? By not using the term occupation, Locke places a wedge between his theory and both Roman and common law traditions. He only makes matters worse with his famous statement that property is acquired when “he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property.”³⁴ But then he quickly equivocates:

He that is nourished by the acorns he picked up under an oak, or the apples he gathered from the trees in the wood, has certainly appropriated them to himself. No body can deny but the nourishment is his. I ask then, when did they begin to be his? when he digested? or when he eat? or when he boiled? or when he brought them home? or when he picked them up? and it is plain, if the first gathering made them not his, nothing else could. That labour put a distinction between them and common....³⁵

He shortly thereafter extends the argument to land:

But the chief matter of property being now not the fruits of the earth, and the beasts that subsist on it, but the earth itself; as that which takes in and carries with it all the rest; I think it is plain, that property in that too is acquired as the former. As much land as a man tills, plants, improves, cultivates, and can use the product of, so much is his property. He by his labour does, as it were, inclose it from the common.”³⁶

One possible way to read this last passage is that Locke treats cultivation as a minimum condition for ownership, at which point there is a conscious departure from the Roman and common law rules on occupation, done perhaps to deny Indians title to lands in the colonies. (Locke developed the constitution for the Carolinas.) But that reading seems to be incorrect for two reasons. The first is that he notes that the rules governing acorns carry over here, and second he notes in the last sentence that their labor “incloses” land, which is much closer to the Roman conception that occupation of land requires a delineation of its boundaries. At no point does Locke offer any reason why the rules of acquisition should differ by property type. What is critical with land is critical with acorns. The ownership is established early in the cycle so that the subsequent acts of improvement are not needed to perfect title, which gives the owner the option to use or to store, without adverse legal consequences. The same rule applies to land, and the modern

³³ “[T]he term *scheme or artifice to defraud* includes a scheme or artifice to deprive another of the intangible right of honest services.” 18 U.S.C. § 1346.

³⁴ Id. ¶27

³⁵ Id. ¶28

³⁶ Id. ¶32

zoning rules that hold that development rights only vest when permits are granted creates the major risk that extensive predevelopment risks can be wiped out with a stroke of the pen.³⁷

Much turns on the proper reading. Taking the Lockean labor theory literally, *only* the value added by the appropriator is protected, and *not* the total value of the product.³⁸ At that point, it tends to verge on the Marxist labor theory of value: ‘the value of a commodity can be objectively measured by the average number of labor hours required to produce that commodity.’³⁹

For both physical and intellectual resources, it is a *grievous mistake* to shift from occupation to cultivation. Start with land. Suppose A acquires by initial occupation a bare plot of land that is worth \$100. By dint of hard labor he increases its value to \$1,000, at which point it is taken by another, or claimed by the state. The appropriate remedy is \$1,000, both in tort and condemnation settings. That award embeds in it full compensation for the market value achieved from the labor expended: the protection of the full value of the property necessarily offers full protection for the labor. Indeed, as an economic matter, it is best that any acquirer spend *as little labor* as possible on the improvement of the value of the land to increase the net surplus from private ownership. Indeed, an expenditure of \$900 in labor to drive the value of the land up \$900 results in *no* social gain from the improvement, which is what the Marxist theory of labor seems to require. Hence, the smaller the amount of labor that the owner needs to acquire that \$900 improvement, the greater the social gain. But that outcome will be realized only if the full \$1000 value is protected from expropriation, just as it is protected in the event of a private sale.

In addition, explicit allowance has to be made for the *ex ante* uncertainty of the initial venture. Capping the value received from property to the amount of the cost of labor expended on that one venture does not allow the appropriator ever to recover for the value of labor spent on failed projects. If the gains on successful ventures are small, and the losses are absorbed by the actor, no one will take the risks necessary to drill for oil or create new inventions or literary works. The gains on winning projects have to cover the losses from all dry holes and dead ends or the enterprise stops. It is futile to try to build those gains into the recovery for successful products by boosting up the final yield because no one knows how many failures occurred for each success or how much they cost. Nor is there any reason to make that a public determination, when the state can only guess on the size of losses from other transactions, given the open invitation for entrepreneurs to pad expenses. The initial occupation gives full value but still leaves owners subject to market constraints on what they can earn, and these automatic

³⁷ For illustration of the uncertainties, see *Valley View Industrial Park v. City of Redmond*, 733 P.2d 182 (Wash. 1987) (*en banc*).

³⁸ See Edwin C. Hettinger, *Justifying Intellectual Property*, 18 PHIL. & PUB. AFFAIR. 31, 37 (1989).

³⁹ David L. Prychitko, *Marxism*, The Concise Encyclopedia of Economics, available at <http://www.econlib.org/library/Enc/Marxism.html>.

constraints should reduce first the number of unwise projects and second the costs of sound ones, without entering into this regulatory morass.

This same analysis applies with respect to IP, where the key insight is that the statutory formalities required for the acquisition of rights should be kept as simple as possible lest the surplus be destroyed by heavy requirements of registration. Indeed, this sound approach is generally followed today. Thus, US patents require modest standards of patentability, such as nonobviousness, but not proof of commercial value. Indeed, if anything, pioneer patents receive somewhat more expansive protection in order to jump start new development.⁴⁰ Patent protection then promotes commercialization; commercialization is not needed to perfect the patent claim.⁴¹ To be sure, the U.S. patent law has a requirement of “utility” which tends to bite only in the rarest of cases. Elsewhere, Article 27 of TRIPS states that any patent must be “capable of industrial application,” which in the sidebar is said to require only that the invention be useful.⁴² This “industrial applicability” requirement demands proof of commercial benefit to weed out inventions that have only theoretical and not practical purposes. There is a wide variation in its interpretation but in general it is read “in its broadest sense.”⁴³ That last concession makes good sense, but opens up a further question: Why require a public determination of future value for patentability when matters should sort themselves out without any independent legal requirement? Few people will take the time to patent matters that have no commercial value, so why add an extra test that, if mistakenly applied, could only complicate the patenting process?

Similarly, minimal rules apply to copyright to facilitate quick and easy commercialization. For example, protection attaches the moment a work is fixed in some tangible medium. In these cases, as in land cases, the simple requirements for the perfection of title eliminates

⁴⁰ *Cimiotti Unhairing Co. v. American Fur Ref. Co.*, 198 US 399, 406 (1905) (‘It is well settled that a greater degree of liberality and a wider range of equivalents are permitted where the patent is of a pioneer character than when the invention is simply an improvement, may be the last and successful step, in the art theretofore partially developed by other inventors in the same field.’). See also *Application of Hogan*, 559 F.2d 595, 606 (C.C.P.A. 1977) (“As pioneers, if such they be, they would deserve broad claims to the broad concept.”). There is a division of opinion whether the same broad view of the doctrine of equivalents applies to improvement patents. See Dan L. Burke and Mark A. Lemley, *Policy Levers in Patent Law*, 89 Va L Rev 1575, 1656 (2003) (downplaying importance of pioneer patents) But see Brian J. Love, *Interring the Pioneer Invention Doctrine*, 90 NC L Rev 379 (2012) (arguing for a more rejuvenated pioneering patent doctrine).

⁴¹ *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405 (1908) (rejecting the view that any nonuse should withdraw equitable jurisdiction of the case).

⁴² Article 25, Note 5, https://www.wto.org/english/docs_e/legal_e/27-trips_04c_e.htm .

⁴³ WIPO Handbook Fields of Intellectual Property Protection ¶2.12

the ownership ambiguity of the limbo prior development. Since the value that the invention or work adds to social welfare is not baked into any tangible asset, it has to be protected separately as a form of IP. If successful, this avoids the indirect theft of labor (which, as through Lockean theory, all own as of natural right) that arises when someone else duplicates the protected work without having to bear any of the costs of its creation.

Yet the limits of patent and copyright protection are critical. The patent only gives the patent holder the right to exclude others from making or vending the protected invention. “A patent is not the grant of a right to make or use or sell. It does not, directly or indirectly, imply any such right. It grants only the right to exclude others.”⁴⁴ A similar right to exclude is conferred by copyrights,⁴⁵ trade secrets,⁴⁶ and trademarks.⁴⁷ A patent or copyright as such does not give its holder the right to make or vend the product in question. That right must come from another source, usually the well-established rights under both common and civil law, for any person to use his materials to make or sell any object that he pleases—a right like other rights that can often be limited for reasons of public policy. Most new drugs, for example, require government licenses before they can be sold.

Nonetheless, the exclusive right to various forms of intellectual property has been frequently attacked on the ground that this right is tantamount to the creation of a legal monopoly. The judicial literature on this question is woefully inconsistent, and there is much evidence that the term monopoly is eagerly invoked by those hostile to the patent system and studiously avoided by those sympathetic to it.⁴⁸ In general, monopoly is inefficient because it raises the purchase price for the goods of the patentee or copyright holder above the marginal cost of their production. Nonetheless, there is a clear analytical distinction between the exclusionary rights conferred by IP and the grant of a legal monopoly in respect of the subject matter to which those rights attach.

Again, the rules governing land, animals, and chattels provide the appropriate benchmark. John Doe, as the exclusive owner of 1000 Marble Lane, does not enjoy an economic

⁴⁴ *Herman v. Youngstown Car Mfg. Co.*, 191 F. 579, 584–85 (6th Cir. 1911). *See also* TRIPS Article 28, which covers not only exclusion but also provides in Section 2: ‘Patent owners shall also have the right to assign, or transfer by succession, the patent and to conclude licensing contracts.’

⁴⁵ *See* 17 USC. § 106.

⁴⁶ *See, e.g., Ruckleshaus v. Monsanto Co.*, 467 US 986, 1011 (1984) (‘[T]he right to exclude is central to the very definition of the property interest.’).

⁴⁷ TRIPS Article 16 (‘The owner of a registered trademark shall have the exclusive right to prevent all third parties not having the owner's consent from using in the course of trade identical or similar signs for goods or services which are identical or similar to those in respect of which the trademark is registered where such use would result in a likelihood of confusion.’).

⁴⁸ For exhaustive document of the equivocation, *see* Giles R. Rich, *The Relation between Patent Practices and the Anti-Monopoly Laws*, 24 J. PATENT OFFICE SOCIETY 85, 92–93 (1942).

monopoly if Jane Roe owns similar property next door. Indeed, in any extended housing market, only rarely does a property owner not face serious competition from others. The only time is when a given home (or, more accurately, the plot of land on which it sits) lies in the path of a railroad or pipeline needed to service the larger community. At this point, the condemnation remedy is available to overcome the holdout problem via payment of just compensation, measured by its value in ordinary use before the coming of the road.

This argument carries over to IP. Any author who copyrights a mystery novel necessarily competes with thousands of other authors in that space. The pharmaceutical company with an exclusive patent on one statin (cholesterol-reducing drug) competes with a dozen other compounds in the same space, given that patent law rightly blocks any claim to patent a broad class of drugs like Cox-2 inhibitors.⁴⁹ Nonetheless, condemnation is rarely an option in patent cases because no one knows which patents should be condemned, or, if condemned, how should they be valued. Instead, private devices work much better to overcome potential holdout questions. Patent pools are commonly used for low-value patents from many different patent holders. In addition, and as Dan Burk discusses in his Chapter later in this volume, key patents (called standard essential patents or SEPs) are incorporated into standards under the established law for common carriers and public utilities, which limit the patentee to the payment of a (fair) reasonable and nondiscriminatory ((F)RAND) rate, which bristles with its own ratemaking complexities.⁵⁰

4. Exclusive Rights in Intellectual Property

4.1 Patents

4.1.1 Protected Subject Matter

Once the limitations of the commons are grasped, the next challenge is to identify the reasons for taking something out of the commons and putting it under private control. In this regard, note that the U.S. Constitution only gives to authors and inventors ‘the exclusive right to their respective writings and discoveries.’ In dealing with patents, the key question is what kinds of activities are needed to take some idea or discovery out of the commons. Both the American and European systems essentially follow a two-part test on the point. The first asks whether the idea or discovery has been transformed into

⁴⁹ *University of Rochester v. G.D. Searle & Co.*, 358 F.3d 916 (Fed. Cir. 2004) (invalidating University’s claim over all COX2 inhibitors, including both Celebrex and Vioxx).

⁵⁰ Yann Ménière, *Fair, Reasonable and Non-Discriminatory (FRAND) Licensing Terms*, JRC Science and Policy Report, (Nikolaus Thumm, ed. 2015), available at <http://is.jrc.ec.europa.eu/pages/ISG/EURIPIDIS/documents/05.FRANDreport.pdf>. Janusz Ordover and Allan Shampine, *Implementing the FRAND Commitment*, *The Antitrust Source* (October 2014), available at http://www.americanbar.org/content/dam/aba/publishing/antitrust_source/oct14_ordover_10_21f.authcheckdam.pdf.

patentable subject matter. The second asks whether, if it has, the resulting invention represents a sufficient advance over previous inventions to justify conferring a state monopoly that gives the patentee the exclusive right to exclude others from its use. Both parts of the test present difficult matters of interpretation.

On the first, the United States patent code lists four classes of patent-eligible inventions: processes, machines, manufactures, or compositions of matter, or any new and useful improvement thereof.⁵¹ The first class covers a variety of scientific methods and techniques for the creation of various new products; the second covers machines that are used to make things; the third includes the manufactures that the machine makes; and the last covers the full range of compounds and chemicals that human ingenuity can devise. These categories contain obvious points of overlap: the lathe made by one company could be a manufacture that is thereafter deployed as a machine. But the far greater concern lies with the gaps in the classification, ie, proposed inventions that do not fall neatly into any of these categories.

Although the statutory language is constant, its interpretation has varied wildly. The correct approach asks whether the purported patent-eligible innovation exerts a blocking function on the ordinary terms of communication and trade. The narrow usage of these key terms does not have that effect. One misguided decision is *Funk Bros. Seed Co. v. Kalo Co.*⁵² in which Justice William O. Douglas—a consistent patent skeptic—held that the process whereby the plaintiff had found ways to mix nitrogen-fixing bacteria that previously inhibited each other's growth into a single application was not patentable, even though it eliminated the need for any farmer to use three separate inoculants. To be sure, the qualities of the bacteria in their natural state are not patentable, but their combined use represents a distinctive application of labor that deserves protection. Far from blocking commerce, this patent and its relevant disclosures give other potential inventors a leg-up in producing different combinations to compete with the initial patented product.

The difference in attitude between *Funk* and *Diamond v. Chakrabarty*,⁵³ decided in 1980, is palpable. *Chakrabarty* held that an oil-eating bacteria was patentable under Section 101(a), taking the view that the 1952 Patent Act let statutory subject matter 'include anything under the sun that is made by man.'⁵⁴ In contrast, the Canadian Supreme Court,

⁵¹ 35 USC. § 101 ('Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.')

⁵² 333 US 127 (1948).

⁵³ 447 US 303 (1980).

⁵⁴ *Id.* at 309, quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952) and H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952). The full sentence reads: 'A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.' The qualifications in this sentence refer to other conditions, e.g.,

in *Harvard College v. Canada*, held that the Harvard oncomouse, which reliably developed cancer tumors, was a higher form of life not capable of being patented as either a manufacture or composition of matter.⁵⁵ *Chakrabarty* is, however, generally followed in Europe and elsewhere, and in Canada, *Monsanto Canada Inc. v. Schmeiser*⁵⁶ cut back on *Harvard* by allowing patent protection for genetically modified organisms. As a theoretical matter, the ultimate inquiry is whether the innovation blocks or facilitates innovation. On that question, the living nature of the organism hardly matters, which now reflects the consensus world-view.

The question of patentable subject matter also arises with various naturally occurring hormones and genetic sequences. In 1911, Judge Learned Hand wrote in *Parke-Davis & Co. v. H.K. Mulford Co.* that the ‘purification of the principle . . . became for every practical purpose a new thing commercially and therapeutically.’⁵⁷ Hence he awarded Jokichi Takamine, the researcher who isolated adrenalin, a composition instead of a process patent, which would have offered little protection to Parke-Davis as the assignee of the patent, because multiple alternative methods of extraction would quickly be developed. So allowing the substance patent has greater potency for what was clearly a pioneer patent.

The obvious question is how far this stratagem can go. In *Ass'n for Molecular Pathology v. Myriad*,⁵⁸ Myriad obtained a set of composition patents on the BRCA1 and BRCA2 genes, which coded for breast cancer. Without citing *Parke-Davis*, the Supreme Court held that the isolation of the genes for BRCA could not be treated as a new composition, but the creation of complementary DNA (cDNA) (i.e. the mirror image of DNA) was indeed patent eligible as a new composition of matter, albeit one that derived in mechanical fashion from basic DNA. In these cases, a compromise position may better serve the innovative purposes of patent law. *In situ*, there is no reason why Myriad should be able to claim the patent so as to block treatment of the genetic defect in sick people by other drugs, either patented or unpatented. That roadblock is far too extensive. But by the same token, it could well make sense to allow the *preparation* of the BRCA genes outside the body to be treated as a new composition of matter on the authority of *Parke-Davis*. But even if that is not done, the overall impact of *Myriad* on basic research is likely to prove small given that the protection for cDNA looms larger than the loss of protection for the isolated gene. What is clear is that any narrower reading of patentable subject matter would threaten all gene patents and produce an instant turmoil in the biotechnology world.⁵⁹

nonobviousness, that have to be satisfied. They do not point to a narrow construction of patentable subject matter.

⁵⁵ *Harvard College v. Canada* (Commissioner of Patents), [2002] 4 SCR 45, 2002 SCC 76.

⁵⁶ [2004] 1 S.C.R. 902, 2004 SCC 34.

⁵⁷ 189 F. 95, 103 (S.D.N.Y. 1911).

⁵⁸ 133 S. Ct. 2107 (2013).

⁵⁹ Peter Gosselin & Paul Jacobs, *Clinton, Blair to Back Access to Genetic Code*, L.A. Times (March 14, 2000), available at <http://articles.latimes.com/2000/mar/14/business/fi-8591> (reporting Joint Statement of US President Bill Clinton & British Prime Minister

A second area of contention involves mathematical algorithms, which standing alone are abstract ideas which fall outside the four classes of patentable subject matter. That position received backing in three Supreme Court cases, the last of which is very close to the line.⁶⁰ The rejection of mathematical algorithms as a means to convert one set of numbers into another seems fair enough. But by the same token, it does not follow that any machine that starts with real data which is then transformed by mathematical means into some measurable output should not be denied patent protection solely because of the intermediate computer step. Accordingly, Judge Rich in *In re Alappat*⁶¹ correctly distinguished earlier Supreme Court decisions in upholding a patent for a machine that used algorithms to remove noise that made it difficult to get clear images on medical instrumentation. He read the earlier Supreme Court cases as meaning ‘that certain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas* until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection.’⁶²

Business method patents are the third great battlefield in the patent wars. In *State Street Bank & Trust Co. v. Signature Financial Group*,⁶³ Judge Rich adhered to his strong pro-patent stance by finding that a data-processing system that implemented a general investment strategy was eligible for patentability, given that the program facilitated the pooling of investments from several different funds, with some clear cost savings. In his view, the program took raw financial data, which it then transformed by use of a machine. As often happens, this litigation ensued only after negotiations broke down over a potential licensing deal. Nothing about this patent would block the development of rival systems to achieve the same business ends.

Nonetheless, the more recent US cases have taken an increasingly a cautious line. In *Bilski v. Kappos*, the US Supreme Court rejected limiting patentable processes under Section 101 to inventions that satisfy ‘the machine-or-transformation test [because it] would create uncertainty as to the patentability of software, advanced diagnostic medicine techniques, and inventions based on linear programming, data compression, and

Tony Blair). The result was a stock price decline in the NASDAQ biotechnology index I for one day, but the market stabilized when the US Patent Office issued a statement that it had not changed its patenting policy. Frank Gaglioti, *Wall Street and the Commercial Exploitation of the Human Genome*, World Socialist Website (April 10, 2000), available at <https://www.wsws.org/en/articles/2000/04/gene-a10.html>.

⁶⁰ *Gottschalk v. Benson*, 409 US 63, 64 (1972) (Douglas, J.) (rejecting a method for converting binary-coded decimal (BCD) numerals into pure binary numerals); *Parker v. Flook*, 437 US 584 (1978) (Stevens, J.) (rejecting mathematical algorithm used to calculate alarm limits, indicating dangerous condition); *Diamond v. Diehr*, 450 US 175 (1981) (rejecting as a mathematical idea an algorithm that allowed accurate temperature calculations).

⁶¹ 33 F.3d 1526 (Fed. Cir. 1994).

⁶² *Id.* at 1543.

⁶³ 149 F.3d 1368 (Fed. Cir. 1998).

the manipulation of digital signals.’⁶⁴ Nonetheless, it held that even under this broad definition, devices for hedging risks in energy markets fell outside the scope of patent law because they are just an attempt to patent abstract ideas. At this point, it remains unclear what lies in *Bilski*’s middle ground between the older machine-transformation test and the abstract idea.

The issue became no clearer in two important U.S. Supreme Court cases. In *Mayo Collaborative Services v. Prometheus Laboratories*,⁶⁵ the Supreme Court held ineligible a diagnostic test for determining the rate at which a specific patient metabolizes thiopurine-based drugs. The protocol was certainly valuable because it eliminated much of the guesswork involved in prescribing the correct amount of medication. Despite its significant contribution to the treatment of autoimmune diseases, the court considered it to be an unpatentable law of nature because it “only” correlated drug levels with treatment options.

The Supreme Court revealed similar hostility towards patents in *Alice Corp. v. CLS Bank International*,⁶⁶ which held patent ineligible an abstract idea for a proposed method to create a third-party financial escrow service that could be implemented on a computer. The Court held that there was no necessary linkage between the notion of cushioning financial risk and any particular device needed to implement that objective. The outcome in *Alice* may have been influenced by its underlying facts since CLS had implemented such a system even though the patent claimant Alice Corporation had not developed its program. *CLS* does not appear to strike down any form of medical instrumentation that takes or transforms raw data and then uses algorithms to transfer them into some usable output⁶⁷—although the matter is now so uncertain in its scope and direction that any generalization is hazardous at best. Whether the subject matter is medical instruments or business method patents, it is a mistake to evaluate each element of a patent claim independent of the overall claim. The correct approach requires that the claimed invention be looked at as a whole, which means that the patent itself should not be rejected as patent ineligible because one part of it involves the application of a natural law or mathematical proposition. These tests take enormous labor to develop and perfect, and they impair the incentive to innovate if, when all is said and done, the patent law permits the theft of labor by overbroad accounts of patent ineligibility.

4.1.2 Nonobviousness or Inventive Step

In many cases, the question of nonobviousness or inventive step overlaps with the issue of patent eligibility. Perhaps the better way to attack the difficulties with algorithms and business method patents is to look at them through the second patent law lens, which asks whether the claimed invention is patent eligible on the ground that it embodies, under

⁶⁴ *Bilski v. Kappos*, 561 U.S. 593, 605 (2010).

⁶⁵ 566 US 10 (2012)

⁶⁶ 134 S. Ct. 2347 (2014).

⁶⁷ *See, In re Alappat*, 33 F.3d at 1526, *supra*.

TRIPS, ‘an inventive step,’⁶⁸ which is treated as synonymous with the term ‘nonobvious.’ Under 35 USC § 102, ‘nonobvious’ means nonobvious to a ‘person having ordinary skill in the art,’ or PHOSITA,⁶⁹ and further that the claimed invention is not covered by some prior art. These well-nigh universal substantive requirements are intended to weed out those claimed inventions that do not represent a sufficient advance over prior technology to merit the economic protection supplied by a patent. This requirement blocks claimed inventions by a rote application of standard technologies. If anyone could do it, then no one should get the exclusive right for doing it first. But just how high should the bar be? PHOSITA was incorporated in the 1952 US Patent Act in conscious repudiation of Justice Douglas’s statement in *Cuno Engineering Corp.*, that to be patentable ‘the new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling.’⁷⁰ That standard, if conscientiously applied, could lead to far fewer patents. Hence the more modest requirement that applies everywhere.

A similar logic explains the requirement that the particular invention not be revealed by ‘prior art,’ or at least, by art that was known or available more than one year before the patent was filed.⁷¹ Here too the sensible claim is that a person should not receive an exclusive right for something that was already available to others, even if the art in question was not publicly known or commercially used. Applying these tests raises difficult questions that are considered by Dan Burk in his Chapter later in this volume. Suffice it to say that, in broad outline, these requirements do about as well as can be expected in separating out those inventions that qualify for patent protection and those that do not.

4.2 Copyright

Copyright law is also organized in a fashion intended to protect the intellectual commons, by again excluding abstract ideas from the protection of the law, which extends its protection only to those activities that are embodied in some tangible means of expression.⁷² The precise definitions vary between the United States Patent law and TRIPS, but the basic conception is the same. Those elements that are necessary for

⁶⁸ TRIPS Section 5, Article 27 (subject to exceptions, ‘patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.’).

⁶⁹ 35 USC. § 103(a).

⁷⁰ *Cuno Engineering Corp. v. Automatic Devices*, 314 US 84, 91 (1941), detested by among others Giles Rich.

⁷¹ 35 USC. § 102(a), (b).

⁷² 17 USC. § 102(a) lists the protected kinds of works, after which Section 102(b) provides:

(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, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

communication and the transmission of ideas are outside the protections of copyright law in order to avoid insuperable holdout problems.

The most difficult question on coverage has to do with the role of originality in copyright protection. Originality makes perfectly good sense in dealing with literary and other works lest the phrase ‘good morning, sir’ receive copyright protection. But the requirement becomes ever more tenuous in connection with databases, where the current copyright law offers explicit protection for ‘compilations,’⁷³ that must reflect the minimal requirement of being ‘original works of authorship.’⁷⁴ But there is a serious question as to why the copyright law should govern this IP area; databases are meant to be reliable, not original. Yet they are costly to put together, and their misappropriation again amounts to a theft of labor that property protection can avoid. In *Feist Publications, Inc. v. Rural Telephone Service Co.*,⁷⁵ the Supreme Court denied protection to a database because its compilation lacked the minimum level of originality. *Feist* then noted further that the copyright law did not accept a ‘sweat of the brow’ approach, and correctly cited the critical case on misappropriation, *International News Service v. Associated Press*,⁷⁶ for the proposition that copyright law did not protect such efforts.⁷⁷ But unfortunately, in a footnote, *Feist* cryptically dismissed, without explanation, the non-copyright arguments that drove *INS* as ‘not relevant’ to the basic problem.⁷⁸ In so doing it blocked a perfectly sensible application of the judge-made misappropriation theory to databases. Instead complex distinctions are now par for the course, such that ordinary yellow pages receive no protection,⁷⁹ but databases targeted to Chinese-American customers do.⁸⁰ The Court in *Feist* rightly noted that *Rural*, as the local public utility, had the inside track on collecting the information its database. That monopoly position should not, however, negate the generalized database protection, which applies to all firms, regardless of how they collect their information. Instead it should subject *Rural* to the standard common carrier duty to supply the information to all comers, including potential competitors, at a fair and reasonable rate. That solution will properly incentivize the production of databases, without allowing the kinds of holdout problems that pervade much of IP law. But outside this monopoly context, strong protection of databases does not raise any blocking or holdout problems, and these rights are in general easily enforced by ‘salting’ a data base with false entries and small errors that make it possible to detect copying. There is no reason for judges to wait for legislation to fill the holes in IP law. The protection of IP

⁷³ 17 USC. § 103(a).

⁷⁴ 17 USC. § 102(a).

⁷⁵ 499 US 340 (1991). *Feist* is also followed in Canada in *Tele-Direct (Publications) Inc. v. American Business Information Inc.*, [1998] 2 FC 22. The same rule was applied in the EU to football schedules in *Football DataCo v. Yahoo*, Case C 604/10 (2012).

⁷⁶ 248 US 215 (1918), discussed *infra* at text accompanying notes [90–92](#).

⁷⁷ *Id.* at 353.

⁷⁸ *Id.* at 354, n. *.

⁷⁹ *BellSouth Advertising & Publ’g Corp. v. Donnelley Information Publ’g, Inc.*, 999 F.2d 1436 (11th Cir. 1993).

⁸⁰ *Key Publications, Inc. v. Chinatown Today Publ’g Enterprises, Inc.*, 945 F.2d 509 (2d Cir. 1991).

should not be limited to the copyright law, given that the theft of labor is possible without copyright infringement. The tort of misappropriation, rightly understood, fills the gap created by the limited scope of the copyright law.

4.3 Trademarks

The public domain also plays a prominent role in the law of trademarks, where the ‘secondary meaning in the term Monopoly—the board game—does not block the everyday use of the term in economic analysis.’⁸¹ Indeed, the proposition goes in both directions, for the ordinary use of a word does not prevent someone making it a trademark for a particular product. Both uses have value, so both uses are allowed. The requirement for a secondary meaning is, however, relaxed for trade dress, at least in those cases where the distinctive appearance is sufficient to create an identification by source.⁸² By the same token, when a given trademark becomes a generic description, it loses trademark protection, which sometimes happens to products that gain a dominant market position, making it easy to confuse a particular brand with the underlying product type. Just that fate happened to terms like aspirin⁸³—when it went off patent, after which it no longer represented the *source* of the product but its chemical formula—thermos,⁸⁴ and cola (but not Coca-Cola) that became part of the common domain open to use by all.⁸⁵

4.4 Right of Publicity

A similar dichotomy exists with the right of publicity in the United States, which deals with the protection of individual names and likenesses from appropriation by others. The initial hostility to protecting this interest in the US rested upon the belief that such protection necessarily would have to apply equally to ‘a responsible periodical or leading newspaper’ on the one hand or an ‘advertising card or sheet’ on the other.⁸⁶ But that need not be the case. Allowing the use of name or likeness is strictly necessary for the dissemination of news. Giving a person a veto on the use of his or her name or likeness in all cases literally makes it impossible to take pictures or give descriptions of people in *public places*, which makes it utterly impossible to speak or learn about the affairs of the day. It is only a little exaggeration to say that this prohibition is equivalent in the world of public affairs to giving a scientist a veto on the use of radium or the equations of quantum mechanics. But there is no similar intrusion on public knowledge or discourse when name or likeness is used instead to promote particular goods and services, carrying with it as always the arguably false impression that the designated person actually endorses that particular product use. The social calculus of the two distinct types of uses thus sharply

⁸¹ *Anti-Monopoly, Inc. v. General Mills Fun Group*, 611 F.2d 296 (9th Cir. 1979). In contrast, with shredded wheat, the supposed trade name offered the only accurate description of the product. *See Kellogg Co. v. National Biscuit Co.*, 305 U.S. 111 (1938).

⁸² *Two Pesos, Inc. v. Taco Cabana, Inc.*, 505 US 763 (1992).

⁸³ *Bayer Co. v. United Drug Co.*, 272 F. 505 (S.D.N.Y. 1921) (L. Hand, J.).

⁸⁴ *King-Seeley Thermos Co. v. Aladdin Indus., Inc.*, 321 F.2d 577 (2d Cir. 1963).

⁸⁵ *Coca-Cola Co. v. Nehi Corp.*, 36 A.2d 156, 161 (Del. 1944).

⁸⁶ *Roberson v. Rochester Folding Box Co.*, 64 N.E. 442, 443 (N.Y. 1902).

diverges, which helps explain why the earlier uncompromising view quickly was cast aside by adopting, both at common law and by statute, a rule that makes it illegal for anyone to use, ‘for advertising purposes, or for the purposes of trade, the name, portrait or picture of any living person without having first obtained the written consent of such person.’⁸⁷ The legal protection thus protects the labor expended to develop that name or likeness, first to stimulate its production, and then to prevent misrepresentation in endorsements. The name or likeness of major personalities are valuable in multiple areas. Its legal protection thus lets one person coordinate the different campaigns in order to develop positive synergies among different advertisement campaigns and to eliminate negative ones. No famous star will endorse both high-end clothes and imitation jewelry.

In modern times, the protection of name and likeness, like trademark protection, has often been expanded to analogous cases to cover distinctive dress⁸⁸ or a distinctive voice⁸⁹ in order to protect the labor that goes into their creation. Nor does it appear that there is any risk of monopoly abuse because the asserted right does not impinge the name or likeness of any other individual who might sell his or her name or likeness in competition with the original person.

4.5 Misappropriation

The interaction between common law and statutory development, evident with the right to publicity, also is relevant to the tort of misappropriation, which has received a far chillier reception. The misappropriation tort emerged in the 1918 case of *International News Service v. Associated Press (INS)*.⁹⁰ *INS* arose toward the end of World War I when the International News Service (INS) consciously lifted information about the European battlefield from the bulletin boards of its competitor, Associated Press (AP), for distribution to its own members for their use in preparing their daily papers during the current one-day news cycle. INS only took information about activities along the western front, and then only because its own reporters were barred from the European front by

⁸⁷ New York Civil Rights Law § 50. Section 51 allows for actions of injunctions and damages.

⁸⁸ *White v. Samsung*, 971 F.2d 1395, 1398 (9th Cir. 1992) (explaining, in the context of a robot image that resembled Vanna White, hostess on the wheel of fortune, that “[i]t is not important *how* the defendant has appropriated the plaintiff’s identity, but *whether* the defendant has done so”).

⁸⁹ *Midler v. Ford Motor Co.*, 849 F.2d 460 (9th Cir. 1988) (involving a sound-alike performance); *Carson v. Here’s Johnny Portable Toilets, Inc.*, 698 F.2d 831 (6th Cir. 1983) (regarding a distinctive introduction to the Carson show to promote a line of portable toilets).

⁹⁰ 248 US 215 (1918). For commentary, see Douglas Baird, *Common Law Intellectual Property and the Legacy of International News Service v. Associated Press*, 50 U. CHI. L. REV. 411 (1983); Richard A. Epstein, *International News Service v. Associated Press: Custom and Law As Sources of Property Rights in News*, 78 VA. L. REV. 85 (1992); Shyamkrishna Balganesh, *‘Hot News’: The Enduring Myth of Property in News*, 111 COLUM. L. REV. 419 (2011).

British and French officials because of their perceived pro-German sentiments. AP had spent extensive money and effort to collect this news. INS well knew that the information was posted solely for the use of AP members.

INS is notable also because of the peculiar reversal of intellectual approaches. Justice Mahlon Pitney, a classical liberal, allowed the action only by one direct competitor against another for the information acquired from the site, but limited that protection to the one-day news cycle, making clear that the information contained in the bulletins was itself *publici iuris*⁹¹—that is, the history of the day open to all. He only sought to protect the labor expended by one company to gather the information, but without creating a monopoly over the information. Accordingly, Pitney relied on the constant motif of the labor theory of value to insist that the defendant should not be allowed ‘to reap where it has not sown.’⁹² Without legal protection, INS could convert AP’s labor to its own use.

The dissents of both Justices Holmes and Brandeis rejected this guarded notion of misappropriation by hewing to the far narrower libertarian conception of basic rights, which treated the appropriation as legitimate because it did not involve the use of fraud in collecting or distributing the information. Accordingly, they thought that the only remedy would be to ask INS to disclose the origin of its information—a step of dubious value. To be sure, that remedy credited AP for its work, but by the same token it instructed the reader of the accuracy of the information supplied, so that they did not need to go back to the original source.

In the US, misappropriation has received cautious, even hostile, treatment in later cases, often for creating common law rights in an area which it is believed should be governed only by legislative schemes. Thus in *Cheney Brothers v. Doris Silk*,⁹³ short-lived fashion designs received no protection under a misappropriation theory even though they could not be efficaciously protected by either patent or copyright law. The scope of misappropriation has generated much academic controversy,⁹⁴ pro and con, but as a matter of first principle, it seems best to offer some limited term protection against flagrant copying. As in other areas, that protection must extend beyond direct knock-offs, for otherwise clever designers will secure nominal changes in their proffered designs to deflect liability without losing their customer base. The protection, if granted, must extend therefore to substantially similar imitations.

This circumvention problem is, of course, not unique to design patterns. The patent law ‘doctrine of equivalents’ has long been used to block devices whose trivial changes are

⁹¹ 248 US at 234.

⁹² *Id.* at 239.

⁹³ *Cheney Bros. v. Doris Silk Corporation*, 35 F.2d 279 (2d Cir. 1929).

⁹⁴ Kal Rautiala and Christopher Sprigman, *The Piracy Paradox: Innovation and Intellectual Property in Fashion Design*, 92 VA. L. REV. 1687 (2006) (against new IP protection); C. Scott Hemphill & Jeannie Suk, *The Law, Culture, and Economics of Fashion*, 61 STAN. L. REV. 1147 (2009).

introduced to circumvent a patent.⁹⁵ Even though patent liability is in general strict, the doctrine of equivalents has a broader reach when there is evidence that the alleged infringer consciously worked from inventions that he knew had patent protection.⁹⁶ The ‘substantial part’ doctrine of copyright infringement achieves a similar result for authorial works, and for the same reason.⁹⁷ Otherwise, the imitator brings to market virtually the same product as the originator, without having to bear the cost of invention or creation, which is why the property right protection must extend to equivalent inventions or substantially reproduced works. The broader protection thus protects against the theft of labor in cases of deliberate use, and of conversion of labor governed by a standard of strict liability when the conversion is accomplished without harmful intention.⁹⁸ Yet the creativity could be stifled in the opposite direction if the first author who writes a play about the marriage of people of two different religions can prevent others from addressing the same social issue. As Learned Hand put the point, ‘It is of course essential to any protection of literary property, whether at common-law or under the statute, that the right cannot be limited literally to the text, else a plagiarist would escape by

⁹⁵ For the inception *see* *Hotchkiss v. Greenwood*, 52 US 248, 266 (1851) (‘No one will pretend that a machine, made, in whole or in part, of materials better adapted to the purpose for which it is used than the materials of which the old one is constructed, and for that reason better and cheaper, can be distinguished from the old one; or, in the sense of the patent law, can entitle the manufacturer to a patent.’).

⁹⁶ See, e.g., *Graver Tank & Manufacturing Co. v Linde Air Products Co.*, 339 U.S. 605 (1950) (describing as a “fraud” the substitution of manganese silicate for magnesium silicate). Similar doctrines apply in the EU. “For the purpose of determining the extent of protection conferred by a European patent, due account shall be taken of any element which is an equivalent to an element specified in the claims.” European Patent Convention, Art. 69.

⁹⁷ These works are protected under the Berne Convention, Article 2, paragraph 3:

Translations, adaptations, arrangements of music and other alterations of a literary or artistic work shall be protected as original works without prejudice to the copyright in the original work.

The analogous provision in US law is 17 USC. § 103(b):

The copyright in a compilation or derivative work extends only to the material contributed by the author of such work, as distinguished from the preexisting material employed in the work, and does not imply any exclusive right in the preexisting material. The copyright in such work is independent of, and does not affect or enlarge the scope, duration, ownership, or subsistence of, any copyright protection in the preexisting material.

⁹⁸ Restatement (Second) of Torts, § 223, Comment b: If the actor has the intent to do the act exercising dominion or control, however, he is not relieved from liability by his mistaken belief that he has possession of the chattel or the right to possession, or that he is privileged to act.

immaterial variations.⁹⁹ The danger here is that the broad extension of the so-called property right may enable right holders to stifle competition by preventing the use of literary ideas or scientific principles—which is always an issue in any intellectual property dispute. Nonetheless, with care to institutional design this difficulty could be avoided by preventing the copying of databases, which should have been resolved in *Feist*, but was not. Needless to say all these questions of institutional design are not peculiar to the United States, but apply to all systems of IP everywhere.

5. The Attributes of Intellectual Property

The initial decision to protect IP rights leaves open the major question of how its attributes should be configured. On this topic, we should expect the same variation in the forms of IP as with physical property, given the profound legal differences for legal regimes in land and water.¹⁰⁰ No one can take physical possession of IP rights, so it is pointless to ask whether IP rights reach to the heavens or descend to the center of the earth. Nor is it important to think about easements over neighboring property. But at least four other dimensions demand more detailed analysis: duration, exclusion, disposition, and takings. The proper approach to these matters rests on the ‘carryover thesis,’ which seeks to make as few adjustments to the various systems of physical property in order to develop the optimal system of IP.

5.1 Duration

Under the usual view, the initial acquisition of land is for perpetual or indefinite ownership. That conclusion rests on the empirical judgment that shortening these property rights by operation of law creates many dislocations but generates few advantages. A fixed temporal boundary makes it difficult for owners to make lumpy investments, some of whose value could easily extend beyond some arbitrarily defined period of exclusive ownership. In addition, an initial term of limited ownership leaves it unclear who takes possession of the property when that term expires. Letting it revert to the commons generates massive instability. To award the property to some arbitrary new entrant creates an unseemly and unnecessary race to claim title for yet another limited period. Starting with outright ownership does not of course preclude the creation by contract or deed of shorter interests for either commercial or familial purposes, whose terms can provide for an orderly transfer of property on termination of the possessory interest.

The analogous inquiry for various IP forms yields a mixed verdict. At one end, the optimal duration for a trademark is permanent, subject as ever to the rules on

⁹⁹ *Nichols v. University Picture Association*, 45 F.2d 119, 121 (2d Cir. 1930) (holding that defendant’s ‘The Cohens and the Kellys’ play was not a knock-off of the popular play *Abie’s Irish Rose*).

¹⁰⁰ For discussion, see RICHARD A. EPSTEIN, *Playing by Different Rules? Property Rights in Land and Water*, in *PROPERTY IN LAND AND OTHER RESOURCES* 317 (Daniel H. Cole & Elinor Ostrom eds 2012)

abandonment, which parallel those for land, chattels, or water.¹⁰¹ These marks tie a particular product to its source, and the value of that linkage does not depreciate over time. Optimal brand investment is far easier with indefinite time horizons. Putting the mark in the public domain robs it of its essential function. The social losses would be huge. Right now the Apple mark is valued at \$145.3 billion, the Microsoft mark is valued at \$69.3 billion, the Google mark is valued at \$65.6 billion, and the Coca-Cola mark is valued at \$56 billion.¹⁰² Of course, the owners of these and other trademarks can exploit their use by issuing multiple licenses or selling them to some third party.

The same basic insight applies to trade secrets. These secrets have no obvious end points, and it would be odd to allow the government to force Coca-Cola, say, to put its secret formula into the public domain when its value has appreciated. So long as competitors may create or acquire their own trade secrets, including the identical formulas or recipes of others, the protection should be of unlimited duration.

The protection of name or likeness also raises a duration issue. Should it last only for the life of the person, as under the New York statute, or does it continue, perhaps indefinitely, after death?¹⁰³ Here the best analogy seems to be the perpetual protection given to trademarks, which are commonly used for advertisement purposes. Even when the name or likeness is itself the object of sale there is little reason to throw it into the public domain, where its value will be diminished. In these cases, the value of the name or likeness is likely to diminish as new competitors emerge, especially in the absence of new exploits to keep the subject before the public. In addition, it is generally wise to allow public figures to keep their former names, both during life and afterwards. These original names only have value because they are still associated in the public eye with the person's new name. Thus Kareem Abdul-Jabbar still retains exclusive control over Lew Alcindor, the name he used during his college days at UCLA. If '[o]ne's birth name is an integral part of one's identity [and] is not bestowed for commercial purposes',¹⁰⁴ it is a right that is retained at least during life," which may pass at death precisely because it retains its commercial value.

The analysis shifts radically with copyrights and patents, where the consensus view is that the subject matter they protect should fall into the public domain after some limited time. The 'limited time' restriction is built into the United States Constitution, and it is adopted everywhere else for the same simple reason. Adding a work or invention into the public domain does not create any of the major dislocations found with land. The future

¹⁰¹ See 15 USC. § 1127, which holds that abandonment takes place when a trademark's 'use has been discontinued with intent not to resume such use.'

¹⁰² Forbes, The World's Most Valuable Brands, 2015 ranking, available at <http://www.forbes.com/powerful-brands/list/>.

¹⁰³ *Factors Etc., Inc. Pro Arts, Inc.*, 579 F.2d 215 (2d Cir. 1978) (protected); *Memphis Development Foundation v. Factors Etc. Inc.*, 616 F.2d 956 (6th Cir. 1980); Felcher & Rubin, *Privacy, Publicity, and the Portrayal of Real People by the Media*, 88 YALE L. J. 1577 (1979).

¹⁰⁴ *Abdul-Jabbar v. General Motors*, 85 F.3d 407, 411 (9th Cir. 1996).

use of a given work or invention does not preclude its use by the original owner. The person who cannot grow wheat on his land when it is occupied by others is in a position to use an invention or sell a copyrighted book after the IP period is exhausted. At this point, the judgement is that the original reason for granting the IP right has been fulfilled, and that any further gains from restricting access to the work or invention will be exceeded by the gains from allowing open access to it.

But much disagreement arises over the duration of that limited term. As a first approximation, virtually everyone agrees that the length of term for a copyright should be longer than that for a patent. The former are unique works of art that are not likely to be independently created by others. Yet their value is limited in at least two ways: first, others are entitled to develop and keep the same work, thereby reducing its value. Second, market pressures from substitute products made with other techniques eliminate its blocking potential, just as one patent can produce an invention in competition with a previously protected invention. But how long is still a question. The original copyright terms in the United States were 14 years, with a 14-year renewal, including renewals for copyrighted works.¹⁰⁵ But the Copyright Term Extension Act of 1998 increased copyright length to life plus 70 years,¹⁰⁶ which brought it into harmony with the copyright term adopted by the European Union in 1993.¹⁰⁷

The prolongation of this rule has survived constitutional challenge in the United States,¹⁰⁸ and has received its widespread acceptance elsewhere. But as a matter of first principle, the period is far too long. It makes no sense to tie the length of protection afforded to commercial literary works to the lives of their authors. The rationale offered for this rule is that it allows artists to protect their children and grandchildren. But better financial devices are available. First, pick the optimal period of copyright protection and then let artists hire financial advisors to invest or consume their revenues like those received from any other source. Those changes do not require the creation of a longer monopoly period, which is especially dubious for extensions to existing copyrighted works that neither receive nor need fresh incentive for creation. To be sure, the free use of a work by another *may* have an adverse effect on trademark use. But that tension is built into the

¹⁰⁵ Act of May 31, 1790, ch. 15, § 1, 1 Stat. 124. The term was extended to 28 years with a 14 year renewal in 1831, Act of Feb. 3, 1831, ch. 16, §§ 1, 16, 4 Stat. 436, 439; and to 28 years with a 28 year renewal in 1909. Act of Mar. 4, 1909, ch. 320, §§ 23-24, 35 Stat. 1080-1081, 1976 Act §§ 302-304. The 1976 Copyright Act, 17 USC. § 302(a) called for a term of 50 years from the date of creation, not publication.

¹⁰⁶ For the American result, see Copyright Term Extension Act (CTEA), Pub. L. 105-298, §§ 102(b) and (d), 112 Stat. 2827-2828 (amending 17 USC. §§ 302, 304). In those cases in which life is not a measuring rod, e.g., anonymous or pseudonymous works, and works made for hire, the CTEA allows a term of 95 years from publication or 120 years from creation, whichever is shorter. 17 USC. § 302(c).

¹⁰⁷ Council Directive 93/98/EEC of 29 October 1993 Harmonizing the Term of Protection of Copyright and Certain Related Rights, 1993 Official J. Eur. Coms. (L 290), p. 9 (EU Council Directive 93/98).

¹⁰⁸ *Eldred v. Ashcroft*, 537 US 186 (2003).

basic system that calls for limited copyright terms in the first instance. Cutting protection back is on balance the better move, perhaps even to the 1790 level. But it will not happen any time soon.

The debate over patent length takes on a different form. Everyone agrees that patent terms should be far shorter than copyright terms, and their length has never been tied to the life of the inventor. Right now the basic US rule is that the patent has a 20-year life that runs from the date of filing, as opposed to the pre-1995 period which was 17 years from the date of issuance.¹⁰⁹ The same period applies in Europe and under TRIPS, consistent with the coordination between the systems. The use of the filing date, as opposed to the grant date, was intended to block the risk of ‘submarine patents,’ whose publication are consciously delayed in order to trap other parties into infringements for which they could be then be held strictly liable.¹¹⁰

The overall explanation for a shorter patent period stems from the basic insight that scientific and technological progress tends to follow discernible patterns once the knowledge has advanced to a certain point, which is why there was, for example, a prolonged battle over patent priority between Elisha Gray and Alexander Graham Bell.¹¹¹ The higher likelihood of an independent invention thus has two consequences. The first is that, given the frequent overlap in research, the protection from infringement does not require any copying, but rests on a strict liability rule by showing that the infringing invention falls within the periphery of the invention claimed by the patentee. The common backdrop also leads to the shorter periods of exclusivity. The monopoly should be shorter because it promises fewer gains.

Yet even within this framework, there is much dispute over whether the same term is appropriate for different kinds of inventions. Software has a shorter useful life and thus seems to call for a shorter period of protection than, say, pharmaceuticals, which keep their value for long periods of time. In the United States, the term has remained constant across patent classes. But the special case of pharmaceuticals has received separate treatment under the 1984 Hatch-Waxman Act, which offers extension periods for patents to offset, at least in part, the time that the patentee cannot market the pharmaceutical because of the want of FDA approval.¹¹² The maximum allowable extension period for drug development is five years, a period that proved adequate in 1984, but is far shorter than the time needed to shepherd certain drugs through the FDA approval process today. Before the passage of Hatch-Waxman, it was estimated that the effective patent life of a drug (i.e. after FDA approval) was about eight years.¹¹³ Today, the useful patent term in

¹⁰⁹ 5 USC. § 154(a)(2).

¹¹⁰ The most notable practitioner was Jerome H. Lemelson.

¹¹¹ For discussion, *see* ROBERT V. BRUCE, *BELL: ALEXANDER GRAHAM BELL AND THE CONQUEST OF SOLITUDE* (Cornell University Press 1990).

¹¹² Its official title is: The Drug Price Competition and Patent Term Restoration Act, Public Law 98-417, codified at 9 USC. § 301 et seq.

¹¹³ Henry G. Grabowski & John Vernon, *Effective Patent Life in Pharmaceuticals*, 10, *Int. J. Technology Management* 98, 103 (2000).

the United States for many key drugs is between 10 and 11 years, which reduces the time available for recoupment of the heavy front end costs.¹¹⁴ That short term has dramatic revenue consequences for many drugs whose value increases over time, as more accurate information arises about their effectiveness and side effects. Even that 10- or 11- year period could be shortened if a new entrant files what is known as a Paragraph IV certification demonstrating that the original patent is either not valid or that the claimant's new drug does not infringe.

5.2 Exclusion, Damages and Injunctions

The carryover thesis applies with full force to the right of the holder of IP to exclude others from use of the protected subject matter. As with real property, the first step in defining the protection comes in setting the basic rule of liability. As noted above, most forms of IP, copyright excepted, rest on strict liability principles, but are subject to defenses like laches and estoppel. The hard question is the choice of remedies in the event that infringement is established. The two basic remedies in all cases are damages and injunctions. Since the work of Guido Calabresi and Douglas Melamed, the choice is commonly said to be *either or between* damages and injunctions.¹¹⁵

At this point, the law reduces to two uncomfortable alternatives. First, award the injunction, at which point the holdout problem could become acute. That prospect is especially true for firms that have existing infringing inventory, or where the infringing patent constitutes only a small part of the total apparatus. Alternatively, to allow the IP holder to recover only damages is to invite competitors to defy patents and dare other parties to sue them in expensive proceedings promising only incomplete recovery. Much of this unappetizing dilemma can be avoided by treating the two remedies as *complements, not substitutes*. By moving away from either corner, states might introduce a wide range of new attractive choices. Injunctions can be partial, conditional, or delayed, and damage awards can be used to fill the gaps, setting them higher for willful infringements than for inadvertent ones. In this area, the basic rule in real estate transactions is to start with the injunction and then to soften it around the edges.¹¹⁶ Hence, the defendant may be given time to stop the offending action or to relocate his operations. Alternatively, the injunction may apply only to certain activities, e.g. limiting heavy drilling to certain times of day like 9 AM to 5 PM. Starting with the injunction

¹¹⁴ Id. at 108. Clearly there is variance about this mean. The number reported for 2015 is about 11 years. See Josh Bloom, Should Patents on Pharmaceuticals Be Extended to Encourage Innovation, Wall Street Journal, January 23, 2012, available at

<http://www.wsj.com/articles/SB10001424052970204542404577156993191655000>

¹¹⁵ Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972).

¹¹⁶ Mark P. Gergen, John M. Golden & Henry E. Smith, *The Supreme Court's Accidental Revolution? The Test for Permanent Injunctions*, 112 COLUM. L. REV. 203 (2012) (attacking the eBay test).

limits the need for damage remedy, and thus reduces the pressure that needs to be placed on either of the two standard measures of damages, ie, lost profits, or a reasonable royalty, both of which can be shrouded in doubt.¹¹⁷ The injunctive rule tends to steer parties to voluntary transactions, except in those cases where they result in undue hardship. In *eBay Inc. v. MercExchange, L.L.C.*,¹¹⁸ however, the Supreme Court purported to adopt the standard rule of equity, which it stated to be

(1) that [the plaintiff] has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.¹¹⁹

The fact-specific questions raised by this four-part test are more difficult to handle than the simpler rule that first stresses irreparable injury, and then seeks to modify the terms of the injunctions, which increases both litigation costs and overall uncertainty. The main consequence is that the weakened protection for IP leads to higher levels of breach, which in turn produces lower levels of investment.

5.3 Alienation

The second major attribute of most systems of property rights is that their holder is presumptively entitled to dispose of them by way of sale, lease, mortgage, gift, will, or license. These transactions can be outright, whereby the transferee steps into the shoes of the transferor; or they can be partial, so that the transferor retains some interest in the property. To control against strategic behavior, the sum of the rights of the parties against the rest of the world should in principle be neither increased nor decreased by the transactions.¹²⁰ The basic aim of the legal system is to reduce the transaction costs in order to facilitate as many voluntary transactions as possible, by the adoption of such devices as writing requirements and registries. Exactly the same logic applies with respect to IP. Reducing transaction costs increases the velocity of transactions in patterns that outsiders cannot predict and may well not understand. In IP, most transactions tend to involve licenses, not sales, except in connection with a sale or transfer of an entire business. In the case of patents, licenses are preferred as risk-sharing devices given the difficulties of patent valuation. Licenses allow the ultimate fees to vary with future returns, and permit the parties to include all sorts of additional terms on matters such as the scope of patent use, royalty terms, sublicensing provisions, and much more. Many licenses turn out to be nonexclusive, which allows the licensor to coordinate user activity that no top-down system could hope to replicate.

¹¹⁷ See 35 USC. § 284. For the range of factors in reasonable royalty cases, see *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1121 (S.D.N.Y. 1970), mod. and aff'd, 446 F.2d 295 (2d Cir. 1971).

¹¹⁸ 547 US 388 (2006).

¹¹⁹ *Id.* at 391.

¹²⁰ For a discussion, see Epstein, *Obituary*, 62 STAN. L. REV. at 463–65, 496–511.

Licenses fall into three general classes: those that are done at retail in individual cases; those that create patent pools, typically of low-valued patents; and those which use intermediaries such as the American Society of Composers, Authors and Publishers and the European Telecommunications Standards Institute to facilitate the broadcasting of copyright works and the adoption of standard essential technologies. The great controversy is over the third class of licenses, where the perceived risk of holdups is large.¹²¹ In my view, the fear is overstated, and with patents, where the issue is most pressing, the key evidence in favor of that position is that in those areas in which standard-setting organizations have been formed and SEPs registered, the rapid increase in product improvement has been accompanied by dramatic reductions in price, which is inconsistent with the claim of any major drag from these problems. The result holds for both the technological advances in such industries as automobiles and airplanes in the first part of the twentieth century and for telecommunications and computers one hundred years later. Nor is this result surprising. The relevant parties are often repeat players; the pressure to reach an agreement lest the entire industry falter are enormous; and the costs of litigating FRAND disputes could easily turn prohibitive, even when there is little prospect of a clear judicial decision.¹²² If there were some large effect, it should be evident without the need to resort to inconclusive statistical evidence. No one thinks that detailed statistical evidence is needed to show how the Food and Drug Administration (FDA) approval process slows down new drugs reaching the market. Yet here the theoretical concerns lack parallel real world examples.

Within this framework, therefore, the major challenge is to identify appropriate limitations on the freedom of alienation. One sensible set of restrictions comes from the competition laws in the EU and the antitrust laws in the United States, which do and should apply to IP just as elsewhere. The first approximation in an area of immense complexity is that it is exceedingly difficult to position antitrust violations in the way in which an individual markets its IP subject matter. But a combination of different holders does raise the possibility of horizontal conspiracies to which direct competitors join, subject to this distinction. Combinations of IP complements are likely to reduce holdout problems through vertical arrangements, while the combination of substitutes increases them through horizontal cartelization.¹²³

Yet it is doubtful that any unique restraint on alienation applicable to IP improves social welfare. Freedom of contract among parties should suffice, so long as notice of their arrangement is given to third parties. The distinctive IP doctrines on the restraint of alienation generally are of little benefit.¹²⁴ In particular, one dubious rule of both copyright and patent law is the ‘first sale’ rule, which prevents the parties to the initial

¹²¹ See materials cited in notes 1 & 2.

¹²² *In re Innovatio IP Ventures, LLC Patent Litig.*, 921 F. Supp. 2d 903 (N.D. Ill. 2013).

¹²³ See generally US Department of Justice and Federal Trade Commission, *Antitrust Guidelines for the Licensing of Intellectual Property* (1995), <https://www.justice.gov/sites/default/files/atr/legacy/2006/04/27/0558.pdf>.

¹²⁴ Richard A. Epstein, *Obituary*, STAN. L. REV. at 496-511, *supra*, note 120.

transaction from imposing limitations on third persons who take with notice of the restrictions on the ground that the power of the copyright or patent is “exhausted” on the first sale. In most cases, it makes little sense for the two parties to impose downstream restrictions, but in some cases it does. For both real property and IP, restraints on alienation tend to be justified when they protect the seller’s retained interest property. As early as 1848, the English Chancery Court in *Tulk v. Moxhay*¹²⁵ insisted that it would be inequitable for anyone to acquire property subject to a restriction for a lower price, only to be able to sell it free and clear of that restriction to a third party. If such maneuvers were allowed, the original sales might never take place.

The point can be generalized. The law of real covenants and equitable servitudes also imposes restrictions that require that the covenants touch and concern the land, that they not impose affirmative obligations, and that they are only operative to parties who own real property. But none of these restrictions matter once the initial parties agree to these restrictions and notice of their terms is given to third parties, at which point the prohibition on these restrictions should be lifted.¹²⁶

The same logic applies to IP. Thus, in *UMG Recordings, Inc. v. Augusto*,¹²⁷ a distributor of stripped-down promotional CDs supplied these free of charge to insiders for promotional use only, instructing the promoter to either destroy or return the CDs. All CDs were labeled to give notice to third parties that they could not acquire these CDs by either license or purchase. The Court struck down these restrictions as an improper restraint on sale. But why? The US first sale doctrine does not apply to licenses, but how to draw the line between a long license and an outright sale? Nor is there any reason to do so when the restrictions in question are intended to allow for the effective promotion of the CD, without cutting into sales. Law casebooks in the United States are routinely given free of charge to professors subject to the understanding that they will not be sold or given away to students. The same restriction applies with equal force in both markets. Freedom of contract arguments should also allow original vendors to structure the resale or licensing agreements that they make with third parties, but in general it is held that the rights of the patentee are somehow exhausted by the first sale.¹²⁸ So long as everyone knows where they stand, why substitute an inefficient judicial bargain for an efficient private arrangement that takes into account the full range of private interests, as is done with the case of land.

6. Takings and Unconstitutional Conditions

¹²⁵ 41 Eng. Rep. 1143, 1144 (Ch. 1848).

¹²⁶ *Neponsit Property Owners’ Ass’n v. Emigrant Industrial Sav. Bank*, 278 N.Y. 248 (N.Y. 1938) (bending older rules to allow modern planned unit developments). For a defense of the development, see Restatement (Third) of Property (Servitudes) § 4.8 (2000).

¹²⁷ 558 F. Supp. 2d 1055 (C.D. Cal. 2008).

¹²⁸ See *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 US 617 (2008).

The last unit of common development applies to cases, common in Europe, in which the state either takes IP outright or imposes some restriction on its use or alienation. For these purposes, the initial point is that all legal systems recognize that even though a state may refuse to recognize IP, once it is created it becomes a form of protected property. At the very least, this means that the state cannot cancel the grant at will, such that everyone else is entitled to use the subject matter as of right, free and clear of all royalty obligations. ‘That intangible property rights protected by state law [i.e. one of the United States] are deserving of the protection of the Taking Clause has long been implicit in the thinking of this Court.’¹²⁹ The same of course applies to rights created under national law, so that a patent ‘confers upon the patentee an exclusive property in the patented invention which cannot be appropriated or used by the government itself, without just compensation, any more than it can appropriate or use without compensation land which has been patented to a private purchaser.’¹³⁰

At this point the parallels to other forms of property remain clear. To be sure, Congress is under no obligation to create either a patent or copyright system under the US Constitution, but it has done so for good reason from 1790 onward. The systems thus created mean that inventions and works are developed from the bottom up, not the top down. The central government asks whether these inventions and works fall within the permissible boundaries, but leaves it to private initiative, sometimes with government support, to drive innovation and creativity, by choosing the inventions to patent and the works to copyright. In basic outline, the patent and copyright systems operate the same way within the EU and elsewhere.

At this point, the inquiry turns to deciding what government actions count as takings for which compensation is required. As a first approximation, *any* relaxation of the statutory rights of exclusive use counts as a taking of either the copyright or patent, where the loss is measured by the loss in value to the owner, a figure that will be smaller if he or she retains the basic right to practice or sell the protected invention or produce or sell the protected work, even as others may use them. The only difference between the cases of total and partial expropriation lies in the measure of the damages. In most of these cases, putting something into the public domain will qualify tautologically as a public use, unless perhaps, rarely, if the legislation transfers the exclusive rights to another private party. Most jurisdictions follow some analogous version of the *per se* rule for permanent physical occupation announced in *Loretto v. Teleprompter Manhattan CATV Corp.*,¹³¹ suitably adopted to cover cases in which outsiders make use of the protected IP subject matter, which they by definition cannot reduce to exclusive possession.¹³² It would be a

¹²⁹ *Ruckelshaus v. Monsanto Co.*, 467 US 986, 1003 (1984).

¹³⁰ *James v. Campbell*, 104 US 356, 358 (1881), quoted in *Horne v. Dep’t of Agric.*, 135 S. Ct. 2419 (2015).

¹³¹ 458 US 419 (1982).

¹³² For a defense of this view, see Richard A. Epstein, *The Constitutional Protection of Trade Secrets and Patents under the Biologics Price Competition and Innovation Act of 2009*, 66 FOOD & DRUG L. J. 285 (2011); Richard A. Epstein, *The Constitutional Protection of Trade Secrets under the Takings Clause*, 71 U. CHI. L. REV. 57 (2004).

mistake to assume that the *per se* rule has no application to IP. At the very least, it should apply to any and all cases where the government makes a restricted use of the IP subject matter, instead of just restricting the uses that the IP holder can make, without conferring rights of use on the public or some members thereof.

The issue becomes somewhat more complicated when there is a partial restriction on the use of the protected material that does not involve its required use by another party. Apart from the antitrust laws, these are relatively uncommon situations, so little law on them exists. But the more important question in this context has to do with the interaction between IP rights and independent systems of health and safety regulation. In general, patented property or trade secrets should not receive any exemption from general health and safety law, but there is always a hard question about whether regulation is a bona fide health and safety matter, or a disguised effort to alter the competitive balance among private firms through the licensing process.

With drugs or fungicides, for example, it is widely and properly accepted that these can be kept off the market until proven safe and effective. The high level of scrutiny given to these matters usually does not have constitutional significance anywhere in the developed world. But the legal issue becomes far closer when the granting of a license or permit is conditioned upon *sharing* the protected IP with other individuals. In the American context, *Ruckelshaus v. Monsanto* initially treated trade secrets as protected property, only to strip that protection away in the next breath by holding that the government could condition a permit to sell on its willingness, going forward, to share trade secret information with its competitors. In its view, ‘Monsanto was on notice of the manner in which EPA was authorized to use and disclose any data turned over to it by an applicant for registration.’¹³³ But giving notice by statute or regulation should never be sufficient grounds for stripping subject matter of its IP protection, lest the subject matter become worthless. It is no answer to say that an inventor or author that does not like the condition is free to sell his products outside the United States, which they could do anyway, assuming of course, that they do not receive notice of the same condition.¹³⁴

Nonetheless, that result is sometimes achieved by resorting to such slippery notions as ‘reasonable investment backed expectations.’¹³⁵ But that ploy should never be allowed to force the surrender of private rights, lest novel conditions put all such property in the public domain. Fortunately, *Monsanto* was not followed in *Philip Morris, Inc. v. Harshbarger*,¹³⁶ which struck down a Massachusetts statute¹³⁷ that required tobacco companies to reveal the valuable trade secret of their tobacco additives in order of concentration. The release of that information was ostensibly justified to protect the

¹³³ *Monsanto*, 467 US at 1006.

¹³⁴ *Id.* at 1007, n.11.

¹³⁵ *Id.* at 1005–09.

¹³⁶ 159 F.3d 670 (1st Cir. 1998),

¹³⁷ Mass Ann Laws ch. 94, § 307B (Lexis 2000).

health of Massachusetts consumers, but in reality it allowed competitors everywhere to gain access to valuable trade secrets without compensation.

The situation in these cases indicates the appropriate form of analysis. The system of regulation for health and safety should be structured, if possible, to avoid any distortion of the competitive balance that comes from the protection of patents or trade secrets. In cases like *Monsanto*, it means that the data submitted by one company should never be used by a government agent to pass on the health or safety of a firm's product to its competitor. In a case like *Philip Morris*, it means that governments may demand that companies disclose their additives only if they are found dangerous by public health authorities, and then only if they are not removed from the product in question. These accommodations make sense precisely because IP protection should not be frittered away by attaching onerous conditions on disposition and sale. These are exactly the same kinds of accommodations that have been introduced by the World Trade Organization to make sure that health and safety considerations do not swamp ordinary competitive processes.¹³⁸

7. Conclusion

The detailed overview of IP law in this Chapter is intended to show the continuity that exists between IP and other property systems. In virtually all cases, the proper approach is to first seek the proper analogy in the wide repertoire of physical property. Once that is done, the next question to ask is how the relevant IP regime ought to be modified to take into account its distinctive nature. Using that approach stresses the startling similarities across the physical/intellectual property divide. In both areas, property is divided between common and private, and for exactly the same reason: to minimize the sum of negative externalities and holdout risks. Private property minimizes social conflict and facilitates development, while common property facilitates communication and transportation. In both systems of private property, the correct version of the labor theory of value relies on bottom-up systems of investment whereby title to those forms of property, capable of private ownership, is perfected by expending as little labor in the creation or development of a resource as required to give the world notice of the claim. Both systems need to develop strong bastions of exclusivity, usually protected by a mix of injunctive relief and damages, and usually starting with injunctive relief that can then be tamped down in appropriate cases. All physical and IP systems of property must develop cheap and reliable ways to transfer, license, and record property rights in order to maximize gains from trade. And both systems need strong constitutional property protection against expropriation that survives in an age when health and safety regulations rightly apply, and when all sorts of assets are necessarily and properly subjected to needed health and safety inspections. The ability to forge a single framework of analysis for all property systems helps organize complex new materials in ways that ensure laws everywhere across the globe recognize the optimal mixture of common and private property consistent with overall social welfare.

¹³⁸ See TRIPS Article 7 & 8. For discussion, see *WTO Agreements & Public Health* (2002), https://www.wto.org/english/res_e/booksp_e/who_wto_e.pdf