

Articles

Property as Institutions for Resources: Lessons from and for IP

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The idea of property in land as the paradigm case of property exercises despotic dominion over property thinking. From the perspective of evolving political economy, however, a land-centric model of property makes very little sense. Property institutions coordinate access to resources, and so it is reasonable to expect them to differ in ways that respond to the characteristics of those resources. The debate about whether intellectual property (IP) is property is instructive. IP scholars have pursued the property debate using a conceptual framework derived from common law real property doctrines and organized around the practical and theoretical problems associated with property rights in land, but the resources at the center of debates about the appropriate extent of IP-rightholder control could not be more different from land. Intellectual resources are routinely sliced and diced, aggregated and fractionated, used and reused, in ways that land is not and could not be. This might mean that IP is not property, as some have argued, or it might mean that we have outgrown the monolithic, land-centric model—that in the postindustrial era of wealth production, the cosmology of property can no longer place terra firma at the center.

This Article develops an account of property as a set of resource-dependent legal institutions characterized by overlapping sets of family resemblances and then reconsiders the IP question. Property in intellectual goods resembles property in land in some respects, property in natural resources in other respects, property in corporations in others, and property in intangible financial instruments in still others, but also systematically diverges from each of those other forms of property. Legal institutions for IP must accommodate four important points of divergence: the different incentives of creators and intermediaries; the variety of ways in which intellectual goods are produced; the central importance of intermediation within IP ecologies; and the widespread use of licensing to delineate rights and obligations.

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I. Introduction: One Property or Many?

Among lawyers, perhaps the most famous description of property is William Blackstone’s reference to the “sole and despotic dominion” of the real property owner.¹ Even in Blackstone’s day the statement was more theatrical than strictly descriptive, but theater can prove irresistible. Debates among property theorists about just how despotic the landowner’s dominion should be have been heated and nearly all-consuming. This Article considers an opportunity cost of that preoccupation, which concerns the way that the category of “property” is understood. The idea of property in land as the paradigm case of property exercises despotic dominion over property thinking, with clear consequences for theory and doctrine alike.²

1. 2 WILLIAM BLACKSTONE, COMMENTARIES *2.

2. Preliminary iterations of the argument presented here appear in Julie E. Cohen, *Copyright as Property in the Post-Industrial Economy: A Research Agenda*, 2011 WIS. L. REV. 141, 150–53 [hereinafter Cohen, *Copyright as Property*]; and Julie E. Cohen, *What Kind of Property Is Intellectual Property?*, 52 HOUS. L. REV. 691 (2014).

In particular, the despotic dominion of the property-in-land paradigm has shaped the debate about whether intellectual property (IP) is, or should be, property. IP scholars have pursued the property inquiry within a conceptual framework derived from common law property doctrines and organized around the practical and theoretical problems associated with property rights in land. Even scholars who want to resist the perceived tyranny of the real property owner's dominion nonetheless embrace the more deeply rooted conceptual tyranny of real property as the paradigm case.

The reliance on a real property framework is especially odd because the resources at the center of contemporary debates about the appropriate extent of IP-rightholder control could not be more different from land. Consider first some examples from the domain of copyright: land sometimes is more valuable in larger tracts, but individual contributions to a motion picture or a large and complex computer program must be aggregated with many other contributions for their value to be realized at all. Other types of copyrighted expression are routinely disaggregated—sliced and diced, fractionated and reused, in ways that land is not and could not be. Clips from news programs and popular audiovisual works appear as featured material or background material in documentary and feature films; public performance rights in popular songs are licensed for synchronization with films, television programs, and advertisements; visual artworks may appear in the promotional materials for arts organizations; and excerpts from creative works of all types routinely appear in so-called user-generated content, such as videos posted on YouTube for the world to see. On the technical side, operating systems for personal computers and mobile devices implicate thousands upon thousands of patents. High-technology companies amass patent portfolios to bolster their competitive position—but then may form patent pools to ameliorate holdup problems. So-called patent trolls that acquire previously obscure patents and seek to enforce them can send shock waves through entire industries. In each of these cases, the structure of the underlying IP entitlement is profoundly important; it determines what can be done without asking permission, what requires negotiation, and how negotiations will proceed. And in each case, the atomistic model of property in land provides a very poor template for sorting through the allocative and distributive problems that legal decision makers must confront.

The label “property” does bear on the optimal institutional resolution of these and other difficulties but not in the way that participants in the debates about IP as property have assumed. IP is a species of property, but understanding the significance of that label by reference to land as the paradigm case is a mistake. Property is, to borrow Thomas Merrill's

phrase, “an institution for organizing the use of resources in society.”³ To have a sensible discussion about organizing resource use most effectively and appropriately, one must admit to coequal status as paradigmatic property other major categories of resources that are significant within our political economy. Very roughly speaking, those categories include preindustrial resources (land and chattels), natural resources, industrial-era resources (ownership shares in corporations and similar artificial entities), derivative resources (security interests, mortgages, and the like), and post-industrial resources (intellectual goods). One also must admit to coequal status as first-order forms of property law the various legal institutions that have evolved to manage those resources. Optimizing property institutions for each kind of resource requires careful consideration of the nature of the resource and the different types of access and coordination costs that accompany different institutional design choices.⁴

This Article develops an account of property in intellectual goods that resembles property in land in some respects, property in natural resources in other respects, and property in artificial entities in still others, and that also systematically diverges from each of those other forms of property. Part II takes up the problem of similarity and difference at a general, conceptual level. It begins by noting the mismatch between IP and contemporary property theory and exploring possible reasons for property theory’s adherence to the land-centric approach. It then sketches an account of property as a set of resource-dependent legal institutions characterized by overlapping sets of family resemblances—a family tree whose major branches consist of legal institutions for the management and coordination of different categories of resources.⁵

Part III explores similarities among property institutions, developing a taxonomy of the resource-coordination functions that property institutions need to perform. The purpose of that exercise is neither to derive exact doctrinal parallels nor to engage in post hoc legitimation of particular rules. Rather, it is simply to elicit family resemblances at a lower level of granularity, thereby shedding some light on the range of patterns that characterize property institutions as property institutions.

Part IV returns to the question of IP’s differences, focusing on four important economic dimensions of resource access and use. First, I evaluate the incentives-to-production reasoning that historically has played such a large role in justifying IP and that mirrors the incentives-to-

3. Thomas W. Merrill, *The Property Strategy*, 160 U. PA. L. REV. 2061, 2062 (2012).

4. On access and coordination costs, see generally Lee Anne Fennell, *The Problem of Resource Access*, 126 HARV. L. REV. 1471 (2013).

5. This builds on Hanoch Dagan’s characterization of property as an “umbrella” covering a variety of related institutional forms, but substantially expands the frame of reference beyond property in land. See HANOCH DAGAN, *PROPERTY: VALUES AND INSTITUTIONS* 58, 69–74 (2011).

development reasoning underlying some economic accounts of property in land. Incentives-to-production reasoning has an important role to play in an account of IP, but to understand that role one must consider the particular problems that attend the production and dissemination of intangibles, which are different from those that attend production and development of other kinds of resources. Second, I consider the various modalities by which IP is produced. Both natural resources law and corporate law highlight the importance of considering modalities of production—including not only markets but also commons and firms—when designing property institutions. Ecologies of intellectual production, however, are unusual in the degree to which they reliably involve all three modalities. Third, I explore the importance of intermediation within property systems. Both corporate law’s innovations with respect to the separation of ownership from control and natural resources law’s innovations with respect to collective management contain important lessons for property theory. Here again, however, IP is different; intellectual goods are uniquely amenable to fractionation and combination, and so the extent to which IP institutions facilitate intermediation is especially important. Finally, as many commentators have noted, some emerging IP arrangements occupy a hybrid space between property and contract. Following the real property paradigm, legal scholars have understood those arrangements as raising questions about whether and when the public law of IP should defer to private ordering and control. The perspective developed here suggests different questions, which concern whether and when IP institutions should make room for *sui generis* rules better tailored to the resource-access problems that hybrid arrangements attempt to resolve.

II. Property’s Categories Reconsidered

Whatever their theoretical allegiances, property theorists typically share the assumption that property in land is the paradigm case of property and therefore tend to think that real property doctrines supply the proper template for reasoning about property in other kinds of resources. From the perspective of evolving political economy, however, treating land as the paradigm case of property is anachronistic. That approach positions the principal form of wealth from an earlier economic era—and a set of legal rules designed with the attributes of that resource in mind—at the center of an implicit hierarchical pecking order. Property is more accurately and usefully conceptualized not as a singular entity, but as a heterogeneous, resource-dependent set of legal and institutional forms that are shaped by the constraints of evolving technology and political economy. Property law does not simply define ownership and its limits but also, and more fundamentally, helps to establish institutions for the management of important economic and social resources. So understood, property

encompasses a more varied set of institutions than property theorists traditionally have recognized.

A. *Land-Centric Property and the Challenge from IP*

The land-centric view of property law is so deeply rooted that it typically goes unstated, but it is evident in all facets of property scholarship from the selection of examples in articles to the structure and content of property casebooks. Property scholarship is overwhelmingly land-centric, iterating the themes of dominion and access principally in residential and commercial real property contexts and occasionally gesturing toward chattel property as a source of doctrinal or theoretical insight.⁶ Casebooks authored by property scholars are organized almost entirely around the intricacies that attend land use and land transactions.⁷ For these writers, as for generations of legal scholars before them, “property” means land and real property law is archetypal.

Slowly but surely, examples drawn from patent and copyright law have begun to make their way into property scholarship, where they promptly introduce complications. Their subject matter is maddeningly abstract; their entitlement structures are statutory; their entitlements are limited in ways and for reasons that seem to have no direct parallels in real property law; and their markets are intermediated in complex ways.⁸

Perhaps for these reasons, mainstream property scholarship has had very little to say about IP until relatively recently.⁹ In property casebooks, IP cases and note materials now routinely appear in chapters about recognition and initial allocation of property rights; afterward, though, IP simply disappears, leaving the reader none the wiser about the extent to which IP regimes might differ from regimes of real property law more

6. Examples are too numerous to canvass; the orientation toward land is foundational. As Thomas Grey explained in 1980, citing “conversations with colleagues who teach law school courses in property”:

The law of property for law teachers and law students typically is the whole body of law concerned with the use of land[] The only thing these doctrines have in common with each other is that they concern real estate as distinguished from other aspects of the economy.

Thomas C. Grey, *The Disintegration of Property*, in PROPERTY: NOMOS XXII, at 71, 82 n.3 (J. Roland Pennock & John W. Chapman eds., 1980).

7. See, e.g., JESSE DUKEMINIER ET AL., PROPERTY, at xi–xxiv (8th ed. 2014); ERIC T. FREYFOGLE & BRADLEY C. KARKKAINEN, PROPERTY LAW: POWER, GOVERNANCE, AND THE COMMON GOOD, at vii–xv (2012); THOMAS W. MERRILL & HENRY E. SMITH, PROPERTY: PRINCIPLES AND POLICIES, at xix–xxx (2d ed. 2012); JOSEPH W. SINGER, PROPERTY LAW: RULES, POLICIES, AND PRACTICES, at xiii–xxviii (6th ed. 2014); JOHN G. SPRANKLING & RAYMOND R. COLETTA, PROPERTY: A CONTEMPORARY APPROACH, at xi–xx (2d ed. 2012).

8. On the importance of intermediation in intellectual property markets, see subpart IV(C).

9. See *infra* text accompanying notes 23–28.

systematically.¹⁰ In both settings, IP stubbornly resists the real property model. But most property scholars seem to think of the various kinds of IP as property's unruly stepchildren—outlier cases presenting variations on the basic problems and themes.

There are several likely explanations for land-centrism in property thinking, but none is persuasive as a justification. One reason for land-centrism simply may be that law is precedent bound and therefore backward looking. So property thinking is dominated by the paradigm of property in land because property in land came first. The land-centric structure of property thinking likely also reflects widely shared cognitive tendencies that organize our language and our thinking. Culturally embedded patterns of cognition tend to privilege radial categorization organized around paradigm cases over other possible modes of comprehending and categorizing things and concepts.¹¹ More generally, the human tendency to use concrete referents as stand-ins for more abstract concepts probably helps to explain why property theory orients itself first and foremost toward what is “real.”¹² But there is no particular reason to believe either that a radial categorization of property is the best or most accurate one or that precedent solves all problems.

Another reason for land-centrism in property thinking is methodological. Models of property rights derived from neoclassical economics and analytic philosophy have favored ideal, abstract forms. Two leading models are Harold Demsetz's evolutionary account of property rights, which holds that exclusive ownership emerges naturally in response to changes in valuation and fencing costs,¹³ and the modularity theory of property rights developed by Thomas Merrill and Henry Smith, which holds that property rights are best understood as a rough-cut effort to minimize information costs and transaction costs.¹⁴ Within both models, property is

10. IP examples appear to be understood by casebook authors as adding value chiefly because they offer an opportunity to explore the different normative justifications for recognizing property and the ways in which those justifications suggest different limits on what can be owned. See, e.g., DUKEMINIER ET AL., *supra* note 7, at 51–91; FREYFOGLE & KARKKAINEN, *supra* note 7, at 396–98; MERRILL & SMITH, *supra* note 7, at 131–48, 160–61, 257–67; SINGER, *supra* note 7, at 131–44, 187–254; SPRANKLING & COLETTA, *supra* note 7, at 233–302.

11. See STEVEN L. WINTER, A CLEARING IN THE FOREST: LAW, LIFE, AND MIND 71 (2001); LUDWIG WITTGENSTEIN, PHILOSOPHICAL INVESTIGATIONS 31e–32e (G. E. M. Anscombe trans., 3d ed. 1972).

12. See GEORGE LAKOFF & MARK JOHNSON, METAPHORS WE LIVE BY 17–19 (1980).

13. Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. (PAPERS & PROC.) 347, 347–48, 355 (1967). According to Demsetz, exclusivity promotes optimal resource management because it fosters internalization of costs and benefits, creating incentives for both development and good stewardship and thereby correcting for the tragedy of the commons problem. *Id.* at 356.

14. Henry E. Smith, *On the Economy of Concepts in Property*, 160 U. PA. L. REV. 2097, 2115–16 (2012); Henry E. Smith & Thomas W. Merrill, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 26–27 (2000); Henry E. Smith,

monolithic as a matter of inexorable logic, and the preference for analytical simplicity helps to explain the allure of land as the paradigm case.¹⁵ Another prominent expression of the preference for abstraction is the metaphor of the cathedral, which frames property as an ideal institutional form ordained *ex cathedra*.¹⁶ Contemporary progressive theories of property, meanwhile, are land-centric for very nearly the opposite reason. Progressive property theorists' foundational commitments have to do with the importance of remedying discrimination and subordination in access to important resources and privileges, and to advancing the pursuit of human flourishing, broadly defined.¹⁷ Those general values do not dictate that land should have pride of place within a system of property rights. Because of their preoccupation with power, however, progressive property theorists have been relatively suspicious of the formalism perceived to be lurking in questions about property's categories and definitions, and instead have endorsed the conception of property as a contingent bundle of rights.¹⁸ Therefore, they have tended not to consider systematic differences among

Property as the Law of Things, 125 HARV. L. REV. 1691, 1704–08 (2012) [hereinafter Smith, *Property as the Law of Things*]. By arranging rights in things into “modules” subject to exclusive ownership, property law simplifies interactions regarding the things, enabling more beneficial use of the things to occur. Central to modularity theory is a distinction between exclusion and governance; governance happens at the interfaces between the modules of exclusive property, while the owner's exclusive control regulates matters internal to each module. Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453, S453–54 (2002); Henry E. Smith, *Institutions and Indirectness in Intellectual Property*, 157 U. PA. L. REV. 2083, 2096–97 (2009) [hereinafter Smith, *Institutions and Indirectness*].

15. A third model, espoused by natural law theorists, frames property in terms of control over disposition and use. See Eric R. Claeys, *Exclusion and Private Law Theory: A Comment on Property as the Law of Things*, 125 HARV. L. REV. F. 133, 138–42 (2012); Eric R. Claeys, *Property 101: Is Property a Thing or a Bundle?*, 32 SEATTLE U. L. REV. 617, 617–18 (2009) (reviewing THOMAS W. MERRILL & HENRY E. SMITH, *PROPERTY: PRINCIPLES AND POLICIES* (2007)); Richard A. Epstein, *The Disintegration of Intellectual Property? A Classical Liberal Response to a Premature Obituary*, 62 STAN. L. REV. 455, 465–66 (2010); Adam Mossoff, *What Is Property? Putting the Pieces Back Together*, 45 ARIZ. L. REV. 371, 372–76 (2003).

16. See Lucian Arye Bebchuk, *Property Rights and Liability Rules: The Ex Ante View of the Cathedral*, 100 MICH. L. REV. 601, 602 (2001); Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1106–15, 1128 (1972); Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 YALE L.J. 2091, 2091–92 (1997); Carol M. Rose, *The Shadow of The Cathedral*, 106 YALE L.J. 2175, 2175–77 (1997).

17. LAURA S. UNDERKUFFLER, *THE IDEA OF PROPERTY: ITS MEANING AND POWER* 137–49 (2003); Gregory S. Alexander, *Property's Ends: The Publicness of Private Law Values*, 99 IOWA L. REV. 1257, 1260 (2014); Eduardo M. Peñalver, *Land Virtues*, 94 CORNELL L. REV. 821, 876–86 (2009); Joseph William Singer, *No Right to Exclude: Public Accommodations and Private Property*, 90 NW. U. L. REV. 1283, 1466 (1996).

18. See, e.g., Grey, *supra* note 18, at 69–70; Stephen R. Munzer, *A Bundle Theorist Holds on to His Collection of Sticks*, 8 ECON. J. WATCH 265, 265 (2011).

resources or to ask how those differences might map to systematic differences among kinds of property.¹⁹

Most IP scholars who have tackled the question whether IP is property have taken their cues about the nature of property from property scholarship. In articles with titles like *Intellectual Property Is Still Property*, economically inclined scholars have argued for expansions of exclusive control by reference to the attributes of property in land.²⁰ Scholars in the natural rights tradition take a slightly different approach, observing that intangible resources are different from tangible ones, but then concluding that IP doctrine should diverge from real property doctrine only to the extent necessary to effectuate the overarching goal of control over disposition and use.²¹ Most scholars wanting to resist so-called IP maximalism have found themselves needing to argue that IP isn't really property at all.²² A few IP theorists in this latter group have sought more

19. Greg Alexander's work recognizes certain commercial entities, such as trusts, partnerships, and close corporations as varieties of governance property, but does not consider whether resource heterogeneity might signal the need for greater heterogeneity at the level of theory. Gregory S. Alexander, *Governance Property*, 160 U. PA. L. REV. 1853, 1856–57, 1863–64 (2012). A promising start in that direction is Anna di Robilant, *Property: A Bundle of Sticks or a Tree?*, 66 VAND. L. REV. 869, 923–28 (2013) (using the lens of comparative law to illuminate value pluralism in property regimes). Also worth noting is progressive property theorist Eduardo Peñalver's work with IP scholar Sonia Katyal on the role of "property outlaws," which harnesses insights from IP to inform real property thinking. See generally EDUARDO MOISÉS PEÑALVER & SONIA K. KATYAL, *PROPERTY OUTLAWS: HOW SQUATTERS, PIRATES, AND PROTESTERS IMPROVE THE LAW OF OWNERSHIP* (2010).

20. Frank H. Easterbrook, *Intellectual Property Is Still Property*, 13 HARV. J.L. & PUB. POL'Y 108, 109 (1990); see also Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977) (developing an analogy between patents and land claims granted for mineral prospecting); Henry E. Smith, *Semicommon Property Rights and Scattering in the Open Fields*, 29 J. LEGAL STUD. 131, 132, 134–38 (2000) (analogizing public-use privileges in intellectual property to preindustrial land-use arrangements).

21. See Richard Epstein, *What Is So Special about Intangible Property? The Case for Intelligent Carryovers*, in *COMPETITION POLICY AND PATENT LAW UNDER UNCERTAINTY: REGULATING INNOVATION* 42 (Geoffrey A. Manne & Joshua D. Wright eds., 2011); Epstein, *supra* note 15, at 522–23; Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 321, 325–29 (2009); Adam Mossoff, *Is Copyright Property?*, 42 SAN DIEGO L. REV. 29, 37–40 (2005). Analytically, this approach exemplifies what Katherine Hayles, in a different context, has called the "[p]latonic backhand," which "constitute[s] the abstraction as the originary form from which the world's multiplicity derives[.]" followed by the "[p]latonic forehead," which derives from the foundational abstraction "a multiplicity sufficiently complex that it can be seen as a world of its own." N. KATHERINE HAYLES, *HOW WE BECAME POSTHUMAN: VIRTUAL BODIES IN CYBERNETICS, LITERATURE, AND INFORMATICS* 12 (1999).

22. See generally NEIL WEINSTOCK NETANEL, *COPYRIGHT'S PARADOX* (2008) (arguing that copyright law should be informed by free speech principles rather than by property law and theory); Dan L. Burk, *Muddy Rules for Cyberspace*, 21 CARDOZO L. REV. 121, 132–36 (1999); Mark A. Lemley, *Romantic Authorship and the Rhetoric of Property*, 75 TEXAS L. REV. 873, 895–903 (1997) (reviewing JAMES BOYLE, *SHAMANS, SOFTWARE AND SPLEENS: LAW AND THE CONSTRUCTION OF THE INFORMATION SOCIETY* (1996)); Neil Netanel, *Why Has Copyright Expanded? Analysis and Critique*, in 6 *NEW DIRECTIONS IN COPYRIGHT LAW* 3, 11–15 (Fiona Macmillan ed., 2008).

nuance in the real property model, moving beyond the Blackstonian caricature to flesh out rules of reason for copyright and patent that operate by analogy to real property rules limiting the dominion of landowners.²³

And yet, if one moves away from the relatively narrow debate about whether IP is property and what guidance real property doctrine can supply, one rapidly discovers a literature about the design of IP entitlements and institutions that is far more adventurous, methodologically speaking, than property scholarship proper. As we will see in more detail in Part IV, IP scholarship explores an astonishingly broad array of topics, including the origins of creative motivation, the production of intellectual goods within firms and among distributed communities of peers, the creation of liability regimes to facilitate transactions concerning intellectual goods, and the uses of contracts and licenses to alter IP's default rules.

Property scholarship has responded only tentatively and incompletely to the implicit conceptual challenge posed by the broader IP literature. Smith, for example, acknowledges that the IP entitlements that exist in reality often are complex. Analogizing to situations of nonconflicting use of real property, he observes that there will be situations in which multiple uses are compatible and their boundaries can be delineated relatively cheaply.²⁴ If so, this may justify more “complex interfaces between modules.”²⁵ The insight that certain resources may have attributes that warrant more complex institutional structures has great potential, but it also raises a more general question about which type of structure ought to be the default and which the exception.²⁶ A similar tension appears in the work of Abraham Bell and Gideon Parchomovsky. Bell and Parchomovsky are guided to some extent by modularity theory, but they also attempt to connect property rights more systematically to the multiple, heterogeneous strategies deployed by property owners to extract value and to the limits imposed by law to prevent value dissipation and correct for moral hazard.²⁷ In particular, they identify three types of strategies that are enormously

23. See Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1 (2004); Christopher M. Newman, *Transformation in Property and Copyright*, 56 VILL. L. REV. 251 (2011); Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885 (2008).

24. Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1750 (2007).

25. Smith, *Institutions and Indirectness*, *supra* note 14, at 2123.

26. It is not obvious, for example, why we ought to derive rules to discipline IP's seeming unruliness by looking to the example of shared grazing arrangements in the fields of preindustrial England. See Smith, *supra* note 20, at 132.

27. Abraham Bell & Gideon Parchomovsky, *A Theory of Property*, 90 CORNELL L. REV. 531, 552–58 (2005); Abraham Bell & Gideon Parchomovsky, *Reconfiguring Property in Three Dimensions*, 75 U. CHI. L. REV. 1015, 1017–18 (2008) [hereinafter Bell & Parchomovsky, *Reconfiguring Property*]; Abraham Bell & Gideon Parchomovsky, *The Case for Imperfect Enforcement of Property Rights*, 160 U. PA. L. REV. 1927, 1929 (2012).

important: the creation of fictional ownership to manage assets in multiple-owner situations, the use of asset fragmentation and aggregation as devices for extracting value, and the use of other strategies for reconfiguring control.²⁸ Examples drawn from IP and corporate law feature prominently alongside examples drawn from real property law—and yet the full potential of these examples is not realized. Again and again, Bell and Parchomovsky stop short of considering why certain types of resources seem systematically to elicit these sorts of strategies and what that might signify for a theory of property more generally.

Inspired both by the unruliness of IP and by the vibrancy of IP scholarship on institutional design questions, I want to suggest a different strategy for understanding what property is about and where IP fits in. Both those IP scholars who resist property thinking and those who embrace the finer nuances of the real property paradigm are demanding too little of property law and theory. Property scholars, meanwhile, have demanded too little of IP scholarship (or perhaps have not expected enough). The unruliness of IP signals something important both about IP and about property more generally. It is time to pay attention. Property is neither monolithic nor a vague and open-ended legal conception; its differences are systematic and well worth considering more carefully.

B. *The Property Family Tree*

Consider now a different account of property, tied loosely to the emergence of different resources as important loci of economic and social activity. The first point to note is that efforts to model IP after property in land are ahistorical. The postindustrial, information-age economy in which we live, and with which modern IP laws are concerned, did not emerge directly from the land-based, preindustrial economy. The industrial economy—an economy organized not around land-based wealth per se but around ownership of the means of production—came first.²⁹ The second point to note is that property institutions do not spring fully formed from the pages of legal treatises and statute books; rather, property institutions are emergent. With evolution in the forms of wealth and the vehicles for accumulating capital has come evolution in the forms of property. Value is

28. See Bell & Parchomovsky, *Reconfiguring Property*, *supra* note 27, at 1044–59.

29. I do not mean here to endorse a rigid periodization of economic activity but rather to refer to a set of interlinked processes of evolution and accumulation. See generally DANIEL BELL, *THE COMING OF POST-INDUSTRIAL SOCIETY: A VENTURE IN SOCIAL FORECASTING* (1973) (coining the term “post-industrial” to describe an economic transition away from an economy based principally on manufacturing to one based primarily on the production of information and the delivery of services); DAN SCHILLER, *HOW TO THINK ABOUT INFORMATION* 4–16 (2007) (situating the information economy within capitalist models of production emerging from the industrial era).

not the same as property, but over the long run it has a way of motivating institutional innovation.

In the case of corporate law, necessity was the mother of invention. The law of the preindustrial property system—the law of land and wild animals—couldn't respond to the needs of the industrial age, so the law evolved by developing formal mechanisms for aggregating assets and separating ownership from control so things could get done. Corporate law is not the common law of property, but it is nonetheless a form of property law—an alternate paradigm within which ownership of assets is assumed and maintained so that the resources can be effectively managed. Overlapping with the emergence of the industrial economy was the growing importance of natural resources, of which the industrial economy made far more intensive use. The law of the preindustrial property system contained rudimentary mechanisms for distributive justice in allocation, but those mechanisms proved inadequate to the task of managing ever more intensive demand.³⁰ Here the law evolved by developing more stringent mechanisms for allocation and accountability.

Property scholars are not alone in overlooking the relevance of corporate law to the study of property. Contemporary corporate lawyers and corporation scholars typically do not understand their own subject as property.³¹ Indeed, the idea of the corporation as property is thought to be a non sequitur, both because ownership of shares is decoupled from ownership of assets under corporate control and because corporate ownership of assets lacks certain other attributes that are considered essential to the property right's doctrinal makeup. So, for example, investors may not lay claim to specifically identified corporate assets, and corporate assets may not be destroyed while private assets may be.³² A moment's reflection, however, reveals that the resistance to understanding corporate law as a member of the property family is the land-centric paradigm of exclusive control talking: Industrial-era property isn't property because it doesn't

30. See *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 562–63 (Tex. 1948) (describing the rule of no-waste that limits groundwater withdrawals in jurisdictions following the rule of capture); 3 WATERS AND WATER RIGHTS § 57.08(c) (Amy K. Kelley ed., 3d ed. 2015) (describing the American reasonable use rule for groundwater withdrawals); *id.* § 10.03(b)(3) (describing the reasonable use corollary to riparian-rights doctrine); *id.* § 12.02(c)(2) (describing the beneficial use corollary to prior appropriation doctrine).

31. *But see* Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 YALE L.J. 387, 393 (2000) (identifying the separation between corporate assets and the personal assets of its owners as essentially a property attribute). The two scholars generally regarded as the fathers of modern corporate law understood their subject as a type of property regime. See generally ADOLPH A. BERLE JR. & GARDINER C. MEANS, *THE MODERN CORPORATION AND PRIVATE PROPERTY* (1932); GREGORY S. ALEXANDER, *COMMODITY AND PROPRIETY: COMPETING VISIONS OF PROPERTY IN AMERICAN LEGAL THOUGHT* 342–50 (1997) (discussing Berle and Means).

32. See Note, *Going Private*, 84 YALE L.J. 903, 927 (1975) (noting that courts have found actionable the threatened destruction of corporate assets).

share all of the attributes of preindustrial property.³³ But why should that matter? Corporate wealth and intangible wealth are the intense focus of entitlement-defining choices, value-appropriation strategies, and governance decisions. Perhaps, instead, it is the implicit reliance on a unitary paradigm of property that needs to give way.

Natural resources have seemed more clearly to be property. Water, wild animals, and grazing, fishing, and hunting rights have long been recognized as resources of great value that can be owned by those who appropriate them. Other resources such as coal, natural gas, and oil assumed substantial value as the industrial era emerged.³⁴ The problem, instead, is that common law property doctrines developed against a background of presumed abundance have not always seemed well tailored to the sustainability problems that characterize natural resources.³⁵ Consideration of the kinds of institutions that have developed to manage resource access and coordination costs suggests that property in natural resources is (again) different from property in land. Elinor Ostrom's research on collective management of common-pool resources explored arrangements by which natural resources of various kinds (grazing rights, fisheries, water) are held in common-ownership arrangements to fulfill conservation and resource-management imperatives.³⁶ Social and economic conditions do not always favor the emergence of common-pool regimes, but in those cases the political process increasingly steps in to promote sound resource management. Administrative regimes regulating withdrawals of under-ground resources such as water and oil have become commonplace.³⁷ Such is the power of the land-centric paradigm, however, that the pleas of

33. The international IP system uses the term "industrial property" to refer narrowly to patents, trade secrets, and trademarks. That terminology, which originates in the Continental legal tradition, distinguishes intangible property interests most commonly held and exploited by corporations and other fictional persons from intangible interests that Continental legal systems regard as inherently personal, most notably copyrights. To avoid confusion, this Article uses the terms "industrial-era property" and "corporate property" rather than the simpler "industrial property" to refer to the regime that emerged to govern ownership, management, and use of industrial assets.

34. See Kenneth J. Vandavelde, *The New Property of the Nineteenth Century: The Development of the Modern Concept of Property*, 29 *BUFF. L. REV.* 325, 354–57 (1980) (describing the development of oil and gas law in response to the increasing value of coal, oil, and natural gas).

35. See, e.g., *Colorado v. New Mexico*, 459 U.S. 176, 183–84 (1982) (articulating the principle of equitable apportionment for interstate water disputes and directing that application of the principle incorporate considerations of efficiency in water use).

36. See generally ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (1990).

37. See, e.g., DAVID H. GETCHES, *WATER LAW IN A NUTSHELL* 267–74, 284–93 (4th ed. 2009); JOHN W. JOHNSON, *UNITED STATES WATER LAW: AN INTRODUCTION* § 8.13–.27 (2009); 5 EUGENE KUNTZ, *A TREATISE ON THE LAW OF OIL AND GAS* §§ 65.1–66.4 (1991); 1 *WATERS AND WATER RIGHTS* § 4.05(d) (Amy K. Kelley ed., 3d ed. 2015).

natural resources scholars for more explicit acknowledgement of the special nature of such resources have gone unanswered.³⁸

Now consider IP again. The first IP laws emerged centuries ago, and the various subfields of IP played roles in the rise of the industrial economy, but the flowering of the information economy is a more recent phenomenon.³⁹ It is, I think, no accident that the “intellectual property” terminology came into favor as a way of referring to the universe of rights in intellectual goods at a time when intellectual goods had become leading economic actors in their own right. The term “property” is a label that does important performative work: it announces the gravity of its subject matter and mobilizes a particular way of thinking about how that subject matter ought to be managed. But the property terminology also has worked to obscure IP’s differences. In IP doctrine and theory, the exclusive right remains the basic unit of analysis, but the institutional reality is quite different. Because many intangible assets are most valuable when exploited in combination, large rightholders routinely and deliberately amass strategic portfolios of intangible assets.⁴⁰ Complex doctrines mediate relationships between those entities and the human creators and inventors without whom the assets would not exist at all. Because intangible assets are nonrivalrous and often may be exploited fractionally, and because technical and cultural activities often require coordination around standards or conventions, collective rights management institutions such as patent pools and performing rights organizations play an increasingly high-profile role in mediating access to and use of intangible resources.⁴¹ Public access also plays a prominent role in debates about IP (as it does in debates about natural resources property), and specialized copyright rules (such as those for libraries) have evolved to mediate public access.⁴²

38. See Joseph L. Sax, *The Constitution, Property Rights and the Future of Water Law*, 61 U. COLO. L. REV. 257, 267–77 (1990) (arguing that water law has continually changed in response to societal needs and efficiency standards and that such changes are appropriate because water is also public trust property); Barton H. Thompson, Jr., *Water Law as a Pragmatic Exercise: Professor Joseph Sax’s Water Scholarship*, 25 ECOLOGY L.Q. 363, 372–76 (1998) (describing the way Sax’s work has influenced scholarly thinking about water law and considering the reasons that progress on the legislative and judicial fronts has been more limited).

39. For helpful discussions of the emergence of the information economy and of informational capitalism as a mode of development, see generally JAMES R. BENIGER, *THE CONTROL REVOLUTION* (1986); 1 MANUEL CASTELLS, *THE RISE OF THE NETWORK SOCIETY* (2d ed. 2010); SCHILLER, *supra* note 29, at 4–16.

40. See Yochai Benkler, *Intellectual Property and the Organization of Information Production*, 22 INT’L REV. L. & ECON. 81, 88–89 (2002); Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 27–31 (2005).

41. See Jonathan M. Barnett, *From Patent Thickets to Patent Networks: The Legal Infrastructure of the Digital Economy*, 55 JURIMETRICS 1 (2014); Daniel A. Crane, *Intellectual Liability*, 88 TEXAS L. REV. 253, 268 (2009); Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889, 1948–53 (2002).

42. See 17 U.S.C. § 108 (2012) (setting guidelines for reproduction of copyrighted material by libraries and archives).

As a final example, consider the evolving sets of rules governing intangible financial instruments such as security interests, mortgages, and collateralized debt obligations. For better or worse, such instruments have substantial exchange value and have become important vehicles of wealth creation. Are they therefore property? From the perspective of the traditional property paradigm, the conclusion sits oddly. Security interests, mortgages, and the like are constituted by contract and have no use value and no independent existence. And yet they have both exchange value and specificity: they are interests in payment streams that relate to a specific underlying asset or assets and that are commonly understood to be ownable and tradable. More important, their derivation is mediated by sets of established rules, practices, and institutions.⁴³ I will call these instruments “derivative property” to denote that their existence and their value derive in some way, however indirect, from other types of property whose existence and boundaries are more definite. More than any other category of property, derivative property is emergent. Some interests, such as those arising from currency trades or credit-default swaps, seem too ephemeral and too irregular to justify applying the property label.⁴⁴ In other cases, however, regularized processes of creation and market exchange, in some cases supplemented by instrument-specific regulation, have caused some types of instruments to become reified and take on economic lives of their own.

This loose sociohistorical account of the evolution of different ownership regimes for different types of resources suggests that we might begin to unravel the puzzle of propertyness by acknowledging corporate law, natural resources law, IP law, and regimes of derivative property as institutional forms of property that are coequal with property in land, and by requiring theories of property to recognize and account for the irreducible multiplicity of ownership forms. The various categories of property (including those just listed and others, such as chattel property) may be expected to have family resemblances—attributes that are distributed among the categories, or subgroups of them, in differing degrees, but the family tree is larger and more sprawling than property theorists have acknowledged.⁴⁵ This move opens the way to considering the possibility of systematic, meaningful differences among categories of resources and among the legal regimes developed to manage them.

43. See generally U.C.C. § 9 (AM. LAW INST. & NAT’L CONFERENCE OF COMM’RS ON UNIF. STATE LAWS 2014); GRANT S. NELSON & DALE A. WHITMAN, REAL ESTATE FINANCE LAW (4th ed. 2001); 4 COLLIER ON BANKRUPTCY § 506 (Alan N. Resnick & Henry J. Sommer eds., 16th ed. 2015); RANDAL C. PICKER, SECURITY INTERESTS IN PERSONAL PROPERTY (4th ed. 2009).

44. This may be part of the reason for the trouble these interests have caused; recognition as property provides a point of entry for power but also disciplines it.

45. For a different use of the tree metaphor, see di Robilant, *supra* note 19, at 923–24, 926–28 (exploring value pluralism in European legal regimes governing land ownership and use).

In recent years, important voices within the property canon have begun to move in exactly this direction, arguing (albeit within the confines of the land-centric model) that systems of property create complex, systematic interdependencies that the design of property entitlements must accommodate.⁴⁶ Economists affiliated with the new institutional economics (NIE) have long emphasized the ways that different institutional structures alter the distribution of transaction costs and externalities.⁴⁷ Yet it is important to be more careful—and more lawyerly—about the relationship between institutions and costs. Lee Fennell observes that the “transaction costs” label engenders imprecision in institutional analysis because transaction costs change not only as a function of entitlement allocation but also as a function of institutional design, and because institutional design determines other kinds of costs as well.⁴⁸ Drawing on Ostrom’s work, she suggests an analytic template concerned more broadly with “resource access costs,” a category that includes not only the costs of transferring resources but also the costs of resisting transfers and the costs flowing from suboptimal use.⁴⁹ Property institutions must provide rules for resolving conflicts, but their more important function involves coordinating resource access and use. The family resemblances model of property suggests that resource-specific considerations also will be important factors shaping institutional structure.

An account of property grounded in evolving political economy and organized around institutions for resources remedies important defects in the two dominant strands of economic thinking about property rights. Most

46. See generally LEE ANNE FENNEL, *THE UNBOUNDED HOME: PROPERTY VALUES BEYOND PROPERTY LINES* (2009) (exploring the ways that land-use regulation can unbundle and rebundle entitlements to provide urban residents with goods that are shared as common pool resources); Gideon Parchomovsky & Peter Siegelman, *Cities, Property, and Positive Externalities*, 54 WM. & MARY L. REV. 211 (2012) (discussing use of property institutions to create positive spillovers in urban commercial settings). See also DAGAN, *supra* note 5, at 57–58 (using political economy and philosophy to construct a theoretical account of property as institutional complexity); Hanoch Dagan, *Pluralism and Perfectionism in Private Law*, 112 COLUM. L. REV. 1409, 1412–13 (2012) (same); Joseph William Singer, *Democratic Estates: Property Law in a Free and Democratic Society*, 94 CORNELL L. REV. 1009, 1010–11 (2009) (same).

47. See generally THRÁINN EGGERTSSON, *ECONOMIC BEHAVIOR AND INSTITUTIONS* (1990). The mainstream of property law and economics has actively resisted this intervention. As Smith puts it, “currently a very broad range of institutions would count as ‘property rights’ in the NIE,” and that analytic stance is a deal breaker, conceptually speaking, because it means that the NIE cannot generate a satisfactory “explanation for why property rights are, at their core, rights to things good against the world (in rem).” Smith, *Institutions and Indirectness*, *supra* note 14, at 2084–85.

48. Fennell, *supra* note 4, at 1476–77.

49. Elinor Ostrom & Charlotte Hess, *Private and Common Property Rights*, in 5 *ENCYCLOPEDIA OF LAW AND ECONOMICS: PROPERTY LAW AND ECONOMICS* 53 (Boudewijn Bouckaert ed., 2d ed. 2010); see Lee Anne Fennell, *Ostrom’s Law: Property Rights in the Commons*, 5 INT’L J. COMMONS 9, 9–10, 22 (2011) [hereinafter Fennell, *Ostrom’s Law*]; Fennell, *supra* note 4, at 1494–1509.

scholarly criticism of the Demsetzian model of property rights has focused on its claims about the superiority of private property as an institution for resource stewardship over time. Critics argue that exclusive rights promote good stewardship only to the extent that owners internalize the costs of their resource use and that certain types of costs persistently resist internalization.⁵⁰ They also observe that the Demsetzian narrative about property rights and stewardship does not consider other values, such as democratic or political values, as well as the costs that may flow from pronounced inequalities in resource distribution.⁵¹ Relatedly, they note that if property rights tend to evolve when it becomes possible to fence valuable resources and prevent others from appropriating them, that result may have more to do with power than with shared consensus.⁵² Similar criticisms have been leveled at modularity theory. To begin with, because property often has multiple owners, the distinction between exclusion within modules and governance across modules is not nearly as clear-cut as the module metaphor suggests.⁵³ More generally, there is a continuing dialogue about the extent of desirable exclusion that involves important considerations beyond cost.⁵⁴ In (mostly) eliding these considerations, modularity theory elides the problem of power. At minimum, since the scientific method requires careful attention to alternative possible explanations for observed phenomena, it ought to be important to explain why we should

50. See, e.g., Abraham Bell & Gideon Parchomovsky, *The Evolution of Private and Open Access Property*, 10 THEORETICAL INQUIRIES L. 77, 89 (2009); Daniel Fitzpatrick, *Evolution and Chaos in Property Rights Systems: The Third World Tragedy of Contested Access*, 115 YALE L.J. 996, 1009 (2006); cf. Brett M. Frischmann, *Evaluating the Demsetzian Trend in Copyright Law*, 3 REV. L. & ECON. 649, 652 (2007) (observing that the Demsetzian argument about the virtues of internalization ignores the social value generated by positive externalities); Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257, 268 (2007) (arguing that legal rules for intellectual property should be designed to foster positive externalities).

51. See, e.g., Jedediah Purdy, *A Freedom-Promoting Approach to Property: A Renewed Tradition for New Debates*, 72 U. CHI. L. REV. 1237, 1240–42 (2005).

52. See Saul Levmore, *Two Stories About the Evolution of Property Rights*, 31 J. LEGAL STUD. S421, S429–33 (2002); Katrina Miriam Wyman, *From Fur to Fish: Reconsidering the Evolution of Private Property*, 80 N.Y.U. L. REV. 117, 127–51 (2005).

53. See Alexander, *supra* note 19, at 1855–56; Daniel H. Cole & Elinor Ostrom, *The Variety of Property Systems and Rights in Natural Resources*, in PROPERTY IN LAND AND OTHER RESOURCES 37–38 (Daniel H. Cole & Elinor Ostrom eds., 2012).

54. See generally, e.g., Gregory S. Alexander, *The Social-Obligation Norm in American Property Law*, 94 CORNELL L. REV. 745 (2009) (demonstrating the extent to which various important policies and norms limit owner control); Alexander, *supra* note 19 (discussing the prevalence of “governance property” or common-ownership property); Cole & Ostrom, *supra* note 53, at 37–38 (criticizing simplistic private-ownership models as naïve and incomplete); Peñalver, *supra* note 17 (arguing that property law should promote human flourishing, broadly defined); Singer, *supra* note 46 (arguing that property’s boundary-calibration principles must be assessed relative to democratic values); Henry E. Smith, *Mind the Gap: The Indirect Relation Between Ends and Means in American Property Law*, 94 CORNELL L. REV. 959 (2009) (arguing that a predictable regime of private ownership rights predicated on exclusion promotes human flourishing).

credit the assertion that scientific logic, not power or distributional inequality, explains what exists in practice. An account of property grounded in evolving political economy foregrounds precisely these issues: there are persistent, important connections between power, patterns of internalization and externalization, and patterns of resource distribution, and property institutions often reinforce those connections.

An account of property institutions as emergent responses to resource management problems also enables productive recharacterization of the origin story told by Demsetz, which concerns the inevitability of exclusive control.⁵⁵ The point of the property regime that Demsetz described was not really the land at all; rather, the point was to use land as a proxy for allocating property rights in valuable natural resources.⁵⁶ Allocation of territory was a rudimentary form of fencing that enabled productive stewardship of the resource according to then-available knowledge. But if the point of the exercise is the resource rather than the proxy, it becomes important to acknowledge that management capabilities subsequently might evolve in ways that make other resolutions of resource claims more attractive. Concerns about externalities, long-term sustainability, and distributive justice might create pressures to devise ways of altering the design of legal institutions to account for the common good. From this perspective, the narrative about the inevitability of exclusive control seems truncated, rather as though someone had set out to write a history of air travel that culminated in the invention of the propeller plane. History, moreover, is not teleology. Even if property rights in land constituted a good solution to the problem of stewardship of fur-producing animals in the seventeenth-century Canadian wilderness, that resolution might change over time for a variety of reasons.

The understanding of property institutions as emergent responses to resource-management problems also has important implications for modularity theory's reductionist aesthetic. The terminology of inputs and outputs, modules and scalability, recursion and resilience, and so on derives from the fields of computer programming and systems design, and suggests the increasing importance of computer software as an "intellectual technology"—one that structures our thinking about the world on a deep level.⁵⁷ By a similar token, the "bundle of rights" metaphor for property,

55. See Demsetz, *supra* note 13, at 359.

56. Specifically, fur-producing animals whose pelts could be sold to European traders. *Id.* at 351–53.

57. See Smith, *Property as the Law of Things*, *supra* note 14, at 1701 (discussing HERBERT A. SIMON, *THE SCIENCES OF THE ARTIFICIAL* (2d ed. 1981)); *id.* at 1711–13 (characterizing property rules as persistent, compatible, recursive, and scalable). On intellectual technologies, see NICHOLAS CARR, *THE SHALLOWS: WHAT THE INTERNET IS DOING TO OUR BRAINS* 44–50 (2010). See also LEWIS MUMFORD, *TECHNICS AND CIVILIZATION* 12–22 (1934) (describing the roles of clocks and maps in structuring the modern, abstract understandings of time and space);

which emerged in the early twentieth century,⁵⁸ arguably expresses the intellectual technology of the automated production line, in which prefabricated components were assembled to form the resulting whole. Modularity theory suggests the potential for a more flexible, adaptable regime of bespoke property rights (of which more in subpart IV(D), below) but also a more rigid conceptual hierarchy concerning the basic building blocks. As we have already seen, however, IP in practice more willingly accommodates complexity. To reap the full benefit of understanding property as institutions for resource management, one must look beyond land rights and uses to consider the full range of institutions that have developed to organize the use of valuable resources.

Finally, an account of property grounded in evolving political economy adds needed depth and texture to progressive and critical analyses of property doctrine and theory. Inspired by the legal realists' critique of property's formalisms and categories, some scholars have taken the position that property's rules and categories are entirely arbitrary and serve chiefly to express and reinforce economic power, political power, or both.⁵⁹ Such rules are better understood as technologically and historically contingent, which is not at all the same thing. It is true that the label "property" can become a specious categorization reifying transcendental nonsense,⁶⁰ but it also usefully calls attention to the arrangements through which people order their material and social affairs. Joseph Singer observes that property is not simply inert stuff to be subjected to governance or manipulated according to the whims of power; it is a dominant modality of governance in democratic societies (and, one might add, in capitalist societies).⁶¹ It is a means of

Daniel Bell, *The Social Framework of the Information Society*, in *THE MICROELECTRONICS REVOLUTION: THE COMPLETE GUIDE TO THE NEW TECHNOLOGY AND ITS IMPACT ON SOCIETY* 500, 500–09 (Tom Forester ed., 1980) (describing how the computer is coming to serve as an intellectual technology by virtue of its central role in organizing and processing information and knowledge).

58. See Grey, *supra* note 6, at 69, 75–76; Vandeveld, *supra* note 34, at 357–62.

59. The most well-known contemporary statement of this view is Grey, *supra* note 6, at 77–79. Antecedents of Grey's argument that property reduces to power include Morris R. Cohen, *Property and Sovereignty*, 13 *CORNELL L.Q.* 8 (1927); and Robert L. Hale, *Coercion and Distribution in a Supposedly Non-Coercive State*, 38 *POL. SCI. Q.* 470 (1923).

60. See generally Felix S. Cohen, *Transcendental Nonsense and the Functional Approach*, 35 *COLUM. L. REV.* 809 (1935). It is worth noting that Wesley Newcomb Hohfeld, the patron saint of legal realism, was not opposed to all categorization, but only to categorization that was too abstract to be analytically useful. See Wesley Newcomb Hohfeld, *Some Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 23 *YALE L.J.* 16, 28–29 (1913). Cf. Pierre Schlag, *How to Do Things with Hohfeld*, *LAW & CONTEMP. PROBS.*, nos. 1 & 2, 2015, at 185, 189–90 (arguing that Hohfeldian deconstruction is a method, not a theory).

61. See Joseph William Singer, *Corporate Responsibility in a Free and Democratic Society*, 58 *CASE W. RES. L. REV.* 1031, 1038 (2008) ("Property is not only an individual right but a social and economic system."); Joseph William Singer, *Property Law as the Infrastructure of Democracy*, in 11 *POWELL ON REAL PROPERTY*, at WFL 11-1 to -17 (Michael Allan Wolf ed., 2011).

effectuating both economic and political values. In contemporary postindustrial society, however, systems of land ownership are not the only systems of ownership through which democratic values (or other values) may be expressed.

A theory of property as family resemblances lacks the cathedral's purity of form, though I cannot resist noting that as a historical matter even this concession is debatable; many of the great cathedrals of Europe took decades or even centuries to build and are architectural hybrids.⁶² At any rate, my aim in the balance of the paper is not theoretical purity but rather usefulness. Simply put, a theory of property as family resemblances provides a more useful foundation for understanding the types of rules and institutions through which existing systems of property perform their resource-coordination functions.

III. Resemblances: Property's Resource-Coordination Functions

Building on the family resemblances model described in subpart II(B), this Part develops a general taxonomy of the resource-coordination functions that legal institutions for property need to perform. It identifies ten functions grouped into three categories: functions pertaining to recognition of interests and owners, functions pertaining to provision of public access, and functions pertaining to facilitation of market transactions. I highlight some of the ways that existing property institutions have evolved to perform these functions, noting particularly the variations that exist within each category.⁶³ The existing rules governing property in land, property in natural resources, property in corporations and other artificial entities, derivative property, and property in intellectual goods resemble each other in various ways but do not march in lockstep. Property regimes for different resources also emphasize some functions to a greater extent than others.

The point of this exercise is analytical and speculative. I do not claim that any particular rule or set of rules is either optimal or normatively superior as it currently exists. As one would expect of a set of legal institutions shaped by the constraints of evolving political economy, property rules crystallize both efficiencies and power relations. Existing rules must be understood as effecting both economic and political settlements, and those settlements should not be taken for granted. Even so, there is value in the patterns that this kind of survey can reveal. My goal in this Part is to prompt careful thinking about property on the ground—about

62. See generally David Turnbull, *The Ad Hoc Collective Work of Building Gothic Cathedrals with Templates, String, and Geometry*, 18 SCI. TECH. & HUM. VALUES 315 (1993).

63. This Part discusses rules, doctrines, and policies that are general and well known, so it is footnoted only lightly.

the different combinations of features that characterize property institutions and that signify membership in the property family.

A. *Recognition of Interests and Owners*

The first set of functions that a system of property must perform involves recognition, in two senses. First, a particular resource must be recognized and demarcated as a member of the property family: as a resource whose use is subject to regulation by institutions that rely on private ownership and some corresponding degree of exclusivity.⁶⁴ Recognition processes, like property institutions more generally, are emergent; at some point, however, we need to be able to say that recognition rules have emerged in sufficiently concrete and regularized form and that the property strategy, which entails commodification, is appropriate for the resource in question. Second, owners must be recognized as owners, and ownership often will entail duties of accountability that operate between co-owners or between owners and others with special interests in the use of a particular resource.

1. Appropriability Rules.—Most basically, a regime of property requires rules about what can be owned. For land, chattels, and natural resources, the subject matter of property is obvious: ownership attaches to tangible things and identifiable geographic locations. But appropriability also can be constituted contractually, in the manner prescribed by the background rules that apply to the resource.⁶⁵ Examples of this approach to appropriability include property in corporations and other artificial entities, which is defined in official instruments such as corporate charters, stock certificates, and partnership agreements; and derivative property, which is defined using standard instruments such as security agreements and mortgage notes. Alternatively, appropriability can be defined using more abstract concepts, such as copyright's originality and fixation requirements and patent law's standards of novelty and nonobviousness. Last but not least, appropriability can be foreclosed by a societal determination against commodification of a particular resource.⁶⁶

2. Initial Allocation Rules.—Next, property regimes require a way to distinguish owners from nonowners. In the life of a resource as property, some owner must come first. Rules for identifying that owner (or group of

64. At the end of the taxonomy, I will consider this very general definition in more detail.

65. There is an obvious circularity here, but it cannot be avoided. Historically speaking, neither the resource nor the rules come first. Instead, background rules about adequacy—for example, of a corporate charter or of a mortgage—become more detailed and specific over time as the practices giving rise to the resource became more frequent and ordinary.

66. See generally MARGARET JANE RADIN, *CONTESTED COMMODITIES* (1996); Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849 (1987).

owners) reflect societal beliefs about why both the resource and the owner's contribution to it are important. Put differently, the ostensibly neutral first-occupancy standard must be evaluated relative to some notion of what constitutes occupancy at all. This is so even for types of property created by contract or other formal instrument, as to which ownership flows from provision of capital (rather than, say, provision of labor). The normative underpinnings of other allocation rules are well recognized in the property literature. For natural resources that are subject to rules of capture, first occupancy traditionally has meant control. For patents and copyrights, initial allocation to authors and inventors rests on narratives about creatorship. In American land law, first occupancy sometimes has meant permanent inhabitation and development, at least where occupancy was disputed by the original inhabitants.⁶⁷ Under the system of land ownership that displaced native occupancy, however, individual citizens could buy and hold undeveloped land indefinitely, so that in fact one might plausibly identify provision of capital as the determining factor in initial allocation of land as well.

3. *Claim-Staking Rules.*—Abstract claims of ownership are easy to make; substantiating them can be harder. For that reason, most property regimes also have rules about establishing the existence and extent of ownership. Two types of rules effectuate claim-staking functions: documentation rules, which play an important role in establishing priority and facilitating transfers of property from one owner to the next, and boundary-definition rules, which are used to determine the scope and extent of an owner's claim.⁶⁸ Claim staking typically is accomplished by some combination of the two types of rules, with the precise combination varying from resource to resource.

The easy cases here are regimes of property in corporations and other artificial entities and regimes of derivative property. Because the subject matter of the ownership interest is an abstraction constituted and defined entirely by contract and framed in terms of an ownership share or an entitlement to payments, boundary disputes are nonexistent. Both types of regimes have complex rules about documenting and recording ownership claims.

67. For the classic statement of this view, see *Johnson v. M'Intosh*, 21 U.S. (8 Wheat.) 543, 569–70 (1823).

68. Until recently, contemporary property scholarship has paid much more attention to the boundary-definition problem, but that may be changing. See generally Abraham Bell & Gideon Parchomovsky, *Of Property and Information*, 116 COLUM. L. REV. (forthcoming 2016) (arguing that no theoretical account of the institution of property can be complete without consideration of the role of registries); Maria A. Pallante, *The Curious Case of Copyright Formalities*, 28 BERKELEY TECH. L.J. 1415 (2013) (discussing the roles that copyright registries might play in the digital age).

At the other end of the spectrum is copyright law, which routinely confronts difficult claim-staking problems. Documentation mechanisms in copyright law are radically underinclusive. This is so both because international copyright law views formal claim-staking requirements as offensive to the personhood interests of authors and because the bar to attaining copyright protection is so low. For these reasons, and because registration procedures have changed over the years, verifying ownership and identifying current rightholders can be impossible for some works.⁶⁹ In addition, because a work of authorship is an abstraction, ascertaining the scope of copyright is prohibitively difficult *ex ante*. Instead, claim scope is assessed on a post hoc basis using standards that are widely held to be incapable of precise definition.

Patent law, real property law, and natural resources law lie in the middle. Patents, like corporate shares and unlike copyrights, must be issued by a certifying authority and are recorded at the time of issuance. Rights are defined first by the claim language and secondarily by the background prior art. Similarly, real property interests must be memorialized in writing when they are created, and the writing must describe the extent of the land that is claimed. Over the centuries, descriptions have become much more precise, often including exact coordinates. Real property claims need not be recorded, but because recordation plays an important role in resolving priority disputes, and therefore is required by mortgage lenders and insurers, it has become the norm. Claims to natural resources derive from land ownership at common law and also may be separately documented and recorded pursuant to a supervening administrative regime.

Boundary disputes do occur in all three of these intermediate cases, and in each case the dispute resolution mechanisms are different. In the case of patent claims, attempts at precision in claiming inevitably are undermined both by the inherent ambiguities of language and by ongoing technological changes. In real property, both organically arising land-use patterns and opportunistic behavior by neighbors can disrupt even clear boundaries. Here patent law's boundary-definition rules (including claim construction rules, nonobviousness standards, and the doctrine of equivalents) tend to focus on the nature of the claimed invention, while real property's rules (including both hard-edged doctrines like prescription and more equitable doctrines such as estoppel) tend to focus on the behavior of the parties. In the case of natural resources, claim boundaries are inherently more difficult to determine and at common law have tended to derive from historical usage patterns by landowners entitled to claim a share of the resource. Under administrative regimes, claim boundaries may depend on a

69. This is known as the "orphan works" problem. For a helpful summary, see generally U.S. COPYRIGHT OFFICE, REPORT ON ORPHAN WORKS (2006), <http://www.copyright.gov/orphan/orphan-report.pdf> [<http://perma.cc/8NC9-WSNL>].

variety of factors, including historical usage patterns but also other factors motivated by sustainability concerns. Disputes between owners are resolved not by fixing boundaries (which would be impossible) but instead by applying accountability rules, which I consider next.

4. Accountability Rules.—Finally, systems of property require rules about respect for and accountability to co-owners and others whose interests are recognized as important. Accountability considerations are a particularly striking feature of natural resources law, where they help to reconcile the interests of competing legitimate claimants. Examples from the common law include the riparian-rights doctrine and the no-waste rule for co-owners of subterranean reservoirs. More elaborate common-pool arrangements and administrative regimes have accountability rules that operate within communities of claimants. To similar effect, real property law has a well-established set of doctrines that defines the reciprocal obligations of cotenants and another defining the obligations of life tenants to subsequent possessors. Copyright's rules about accountability to coauthors are similar to the real property rules. Like cotenants of real property, coauthors must account to one another for rents earned from third parties; unlike cotenants, though, coauthors cannot ask a court to partition the property and in many countries (though not the United States) must seek one another's consent before licensing.

Rules about accountability between common owners and co-owners do not, however, exhaust property's conception of accountability. Accountability rules also mediate between different kinds of interests in resources. Examples of such rules within the real property system include those defining the responsibilities of trustees to beneficiaries and landlords to tenants. One of the central purposes of legal regimes governing corporations and similar artificial entities is to establish a framework for ensuring the accountability of managers to shareholders and for resolving principal-agent problems. In each of these cases, accountability rules serve both economic and noneconomic interests.

IP's rules about accountability between different kinds of interests sometimes have emphasized the personhood concerns of creators far more directly than their economic wellbeing. In patent law, accountability rules traditionally required proper attribution of inventorship. Even when inventions were assigned to employers by prior arrangement, patent law preserved naming as the domain of the employee-inventor. The America Invents Act of 2011 changed that practice, allowing corporate claimants to register their interests directly.⁷⁰ Turning to copyright, most countries' laws provide authors and performers with a variety of moral rights, but U.S. copyright law provides only a more limited set of such rights to creators of

70. 35 U.S.C. § 118 (2012).

certain visual artworks. Yet the copyright system also has recognized that personhood rules do not define the full extent of creators' accountability concerns. The copyright rules allowing authors and certain others to terminate transfers and recapture ownership are intended to serve creators' economic interests by offsetting some of the market uncertainties that surround creative production.

B. Provision of Public Access

Property entitlements are limited by a variety of social interests, and a system of property requires rules for effectuating those limits. More so than in either of the other major categories of property rules, rules privileging public access tend to be highly resource specific. In general, however, social interests requiring some form of access to another's property can be organized into two categories. Sometimes the law recognizes access privileges based on transformative conduct or use by the party claiming the privilege. In other cases, public policy creates generalized access privileges.

1. Transformation Rules.—The first category of public-access rules consists of privileges to use and transform another's private property. Transformation rules are particularly prominent in copyright, where they go by the name of fair use, but they exist across the spectrum of property. The doctrine of accession, a staple of chattel-property doctrine, prescribes circumstances under which ownership can change hands following a transformation in the chattel's physical condition.⁷¹ In real property law, a number of doctrines privilege conduct that has as its byproduct some transformative effect on or use of land owned by another. Nuisance law and zoning regulation limit the extent of permissible transformation flowing from changed patterns of land use, but privilege transformative conduct within those limits. In a sense, then, nuisance law and zoning regulation are the fair use doctrine's conceptual opposites; transformation in real property law requires moderation. In addition, real property includes rules about how to allocate the value of improvements made to another's property, which resemble accession rules in some respects, and other rules about easements arising from patterns of use. Corporate law might seem an unlikely place to find transformation rules, because each owner can claim title to only a very small part of the whole, but transformation rules do exist

71. Peter Lee and Christopher Newman have argued that accession supplies a model for understanding rights of transformation in patent and copyright law, respectively. Peter Lee, *The Accession Insight and Patent Infringement Remedies*, 110 MICH. L. REV. 175, 177–80 (2011); Christopher M. Newman, *Transformation in Property and Copyright*, 56 VILL. L. REV. 251, 288–89 (2011). The similarity is striking, but it illustrates a different conclusion: accession doctrine is not a universal template but rather one manifestation of a resemblance shared by many members of the property family tree.

at the aggregate level. Corporate law provides mechanisms by which groups of shareholders can take control of the enterprise and mandate restructuring.

2. *Privilege Rules.*—Other public-access rules are more accurately categorized as privilege rules. Some of these rules can be invoked by any member of the public; others benefit anyone who can claim membership in a particular category (neighboring landowners, creditors, customers, and so on).

Some justifications for privilege rules sound in necessity. So, for example, the classic example of a privilege rule from real property law is the case in which trespass is justified to avert imminent danger to life and limb. Bankruptcy and workout rules for corporations also are driven by necessity considerations, as are trademark law's rules about nominative use and fair use, which describe situations in which ordinary rules of language usage create a privilege to speak in ways that arguably impinge on corporate reputation and shareholder value. Some applications of the idea-expression distinction and the nonobviousness doctrine in copyright and patent, respectively, reflect concerns about necessary access to basic literary, artistic, and technological building blocks.⁷² Considerations of necessity also inform mortgage foreclosure rules and repossession rules for secured property, both of which mediate between the interests of derivative-property owners and owners of the underlying assets.

Some contemporary property regimes, however, recognize a much broader array of policies as justifying public-access privileges. In real property law, privilege rules may flow from nondiscrimination obligations or from other public-welfare goals. In copyright and patent cases, privilege rules define the extent to which creators and innovators enjoy leeway to use inputs claimed by others without regard to necessity; examples include copyright's *scènes à faire* doctrine, some applications of the idea-expression distinction, and the "obvious to try" doctrine in patent law.⁷³

72. See, e.g., *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (observing that patents on natural laws and abstract ideas would appropriate the basic tools of scientific and technological research and "thwart[] the primary object of the patent laws" (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012))); *Baker v. Selden*, 101 U.S. 99, 103 (1879) (observing that "[t]he very object [of communicating knowledge to the world] . . . would be frustrated if the knowledge could not be used without incurring the guilt of piracy of the book"); *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971) ("When the 'idea' and its 'expression' are thus inseparable, copying the 'expression' will not be barred, since protecting the 'expression' in such circumstances would confer a monopoly of the 'idea' upon the copyright owner free of the conditions and limitations imposed by the patent law.").

73. Inexactitude is unavoidable here. Justifications based on necessity and public policy exist on a continuum, and necessity rhetoric figures prominently in privilege cases of all types. For some (relatively) clear expressions of the principle that exclusions from copyright protection are not limited to cases of strict necessity, see *Comput. Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693,

Note that in IP law, unlike real property law, privilege issues and boundary-definition issues intersect pervasively. The boundary-definition problem implicates public privileges in the first instance, and so the same doctrines are called upon to resolve both types of issues.

Natural resources law illustrates the interplay between recognition rules and public-access considerations even more acutely than IP law does. Natural resources law generally lacks both transformation and privilege doctrines, so it might seem to be an outlier here, but it is not. The problem simply is that resources such as water, oil, and gas inevitably are transformed as they are used. Put differently, these resources are inherently infrastructural; they tend to be used and enjoyed not for themselves but rather as inputs into other activities, and in a crowded world their consumption becomes rivalrous.⁷⁴ For these reasons, the concerns that militate in favor of transformation rules and/or privilege rules in the case of other resources tend to manifest at a different stage of institutional design, informing the content of claim-staking rules and accountability rules.

C. *Facilitation of Market Transactions*

The final category of functions that a system of property must perform involves facilitating market transactions. The transactional framing of this category is a deliberate departure from the way that property markets traditionally have been understood. Traditionally, the land-centric model of property has focused primarily on facilitating atomistic owner-to-owner transfers of property holdings. Other sorts of transactional rules, such as those about estates and servitudes, have been evaluated principally with regard to their effects on alienability. The IP system, which encompasses many different kinds of transactions, has never fit easily within this framing. Decades' worth of case law and scholarly literature identifies dissemination of works and inventions to end users as one of the IP system's principal instrumental goals, without which the system could not further its ultimate goal of promoting the progress of knowledge and invention. Monolithic property reasoning about IP has worked to force the dissemination goal and the alienability framing into conceptual alignment, privileging theories about how transfers of ownership facilitate

709–10 (2d Cir. 1992) (excluding from copyrightability computer-program elements “circumscribed by extrinsic considerations such as” industry design standards and expectations); and *A. A. Hoehling v. Universal City Studios, Inc.*, 618 F.2d 972, 979 (2d Cir. 1980) (justifying lack of protection for stock scenes and devices on the ground that such elements are “as a practical matter indispensable, or at least standard, in the treatment of a given topic” (quoting *Alexander v. Haley*, 460 F. Supp. 40, 45 (S.D.N.Y. 1978) (emphasis added))). The “obvious to try” doctrine precludes patentability for predictable variations on publicly available technologies and processes, whether or not the prior art explicitly directs or suggests such variations. See *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415–18 (2007).

74. BRETT M. FRISCHMANN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 61–66 (2012).

dissemination of products embodying intellectual goods. That approach gives too little weight to demand-side considerations, including not only demand by end users but also demand for the use of intangible creations or inventions as inputs into highly complex end products, or as partial inputs into other intangible creations. As we will see, moreover, rules about end users, aggregation, and inputs also appear in other branches of the property family tree.

1. Transfer Rules.—Alienability is not everything, but it is nonetheless a core feature of a property regime. A system of property requires rules to govern the transfer of title to owned resources from one owner to another. Arguably, a regime of resource administration lacking transfer rules would not be a property regime at all. Justice Mosk's classic dissent in *Moore v. Regents of the University of California*⁷⁵ notwithstanding, instances of inalienable personal property are the exceptions that prove the rule.⁷⁶ For most purposes, refusal to make certain types of resources alienable is refusal to admit them to membership in the property family tree.

2. End User Rules.—In addition to rules about transfer of title, property regimes also require rules about dissemination of outputs to end users. As already noted, dissemination is a central concern of both patent law and copyright law. Property theory about IP too often has assumed that rules maximizing alienability of IP rights, and particularly rules that concentrate control in owners, will further dissemination goals. In fact, end user rules in IP are more varied than that framing suggests. Consider, for example, the first sale doctrine in copyright and the exhaustion doctrine in patent law, each of which preserves to end users some control over the disposition of lawfully purchased embodiments of copyrighted works and patented inventions, and therefore conversely limits control by the entitlement owner. In copyright law, special privileges for libraries and public broadcasters are designed to promote end user access, and the fair use doctrine shelters many other end user practices.

Notably, and consistent with the family resemblances model, end user concerns also feature in real property law and in legal regimes concerning derivative property. In real property law, landlord–tenant law is the principal example. Judicial and legislative decisions are shaped by alienability concerns but also by concerns about the availability of rental property, about duties of good faith and fair dealing between landlords and tenants, and about the personhood interests of residential renters. Turning to derivative property, both mortgage law and the law of secured transactions

75. 793 P.2d 479 (Cal. 1990).

76. *Id.* at 509–10 (Mosk, J., dissenting); *cf.* Radin, *supra* note 66, at 1854 (positioning inalienability as the opposite of property).

incorporate significant protections for the owners of the underlying real or tangible assets, and end user concerns have provided the impetus for additional protections in the wake of the subprime mortgage crisis.⁷⁷

End user concerns are much less prominent in corporate law and natural resources law. Traditionally, corporate law has been fairly unresponsive to end user concerns. Protection for end users has been provided, if at all, by other laws: trademark and unfair competition laws, securities laws, environmental laws, food and drug laws, consumer protection laws, and so on. More recently, however, the corporate social responsibility movement has worked to develop ways of modifying the basic corporate instruments to make corporations more directly accountable to the end users of their products and services.⁷⁸ In natural resources law, the needs of end users manifest indirectly. When natural resources regimes impose extraction quotas in the interest of long-term sustainability, they do so with the level of overall public need in mind.⁷⁹ Public utility regimes for water, electricity, and natural gas, which generally incorporate both rate controls and nondiscrimination obligations, also seek to serve end users' interests.

3. Assembly Rules.—A third category of market-facilitating rules includes rules designed to facilitate the assembly of inputs into a larger, cohesive whole. Real property lawyers and scholars have long recognized the importance of assembly rules. Assembly concerns furnish an important justification for exercise of the eminent domain power, and also underlie some types of zoning regulations.⁸⁰ In real property law, however, the framing of the assembly problem through the polarizing lens of the public-private distinction has shaped the analysis, leading many courts, legislators, and commentators to regard land-assembly efforts with suspicion.⁸¹ The

77. See Dodd-Frank Wall Street Reform & Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010).

78. See generally Joe W. (Chip) Pitts III, *Corporate Social Responsibility: Current Status and Future Evolution*, 6 RUTGERS J.L. & PUB. POL'Y 334 (2009).

79. See, e.g., Deborah A. Sivas & Margaret R. Caldwell, *A New Vision for California Ocean Governance: Comprehensive Ecosystem-Based Marine Zoning*, 27 STAN. ENVTL. L.J. 209, 231 (2008) (detailing the California Coastal Act's mission to "protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations").

80. Consider, for example, zoning to preserve undisturbed residential enclaves or to concentrate commercial development in designated "downtown" districts.

81. See Abraham Bell & Gideon Parchomovsky, *The Uselessness of Public Use*, 106 COLUM. L. REV. 1412, 1423–26 (2006) (discussing the widespread disapproval of the Supreme Court's ruling in *Kelo v. City of New London*, 545 U.S. 469 (2005)); Ilya Somin, *The Judicial Reaction to Kelo*, 4 ALB. GOV'T L. REV. 1 (2011) (discussing disapproving responses by state courts); see also Ilya Somin, *The Limits of Backlash: Assessing the Political Response to Kelo*, 93 MINN. L. REV. 2100 (2009) (investigating why strong public disapproval has not translated into widespread legislative reform).

public-private controversy has spilled over into water law, where administrative regimes regulating extraction also perform an assembly function. As such regimes become more commonplace and more restrictive, they have begun to generate novel types of regulatory takings litigation.⁸²

In other property contexts, however, the assembly function is both pervasive and unremarkable. As already noted, the corporate form originated as a device for solving assembly problems associated with large-scale production and continues to perform that function today. IP regimes also routinely confront and smoothly resolve certain kinds of assembly problems. Both copyright law's "work made for hire" doctrine and the patent system's established practice of requiring assignments in the employment context enable the aggregation of intangible inputs into larger works such as motion pictures and computer operating systems.

IP regimes also confront other types of assembly problems, involving inputs that span multiple owners. Getting a mobile operating system to market, for example, can involve licensing tens of thousands of patents. Here the track record is mixed. Solutions to multiple-ownership problems sometimes have emerged through marketplace collective action. In some industries, patent pools facilitate input licensing for assembly on a reasonable and nondiscriminatory basis. In some parts of the software industry, the copyleft regime provides an alternative and highly effective set of assembly rules. In other cases, however, no satisfactory resolution of assembly problems has emerged.⁸³ Pooling arrangements, moreover, remain vulnerable to disruption by patent trolls.

4. Intermediate Input Rules.—There is a final category of market-facilitating rules that maps neither to dissemination nor to assembly, and that includes cases in which resources are used as separately identifiable and often fractional inputs into larger end products. An example might be a stanza of a popular song licensed for synchronization with a television or radio commercial, an excerpt from a news broadcast licensed for inclusion in a documentary film, or a chapter from a history text licensed for inclusion in a college coursepack. A different kind of example is the situation that arises when one computer program interoperates with or calls routines in another program, and must duplicate some of the command structure of the second program for the procedure to succeed. In each case, the question is not how to facilitate creation of an integrated work such as a

82. One especially prominent example is *Edwards Aquifer Auth. v. Day*, 369 S.W.3d 814 (Tex. 2012).

83. Consider, for example, the problem of clearing rights to engage in interactive web streaming of copyrighted sound recordings embodying copyrighted musical works. See Lydia Pallas Loren, *Untangling the Web of Music Copyrights*, 53 CASE W. RES. L. REV. 673, 691–96, 698–702 (2003).

motion picture or computer operating system, but rather how discretionary inputs can be located, viewed, enjoyed, or licensed. Notably, where private collective licensing regimes have emerged, they have attempted to serve multiple values, including profit making but also access and non-discrimination.⁸⁴

Although the intermediate-inputs problem is most closely connected with IP, it too may be found elsewhere in the property family tree. For example, zoning boards and common-interest communities perform essential intermediation functions that involve the production of amenities, governance, and other common goods.⁸⁵ Creators of collateralized debt obligations use a type of derivative property (mortgages) as an input into a different derivative investment vehicle in which individual mortgages are first assembled and then disaggregated. Notably, the latter example is one involving a failure of private institutions to identify and correct for important external risks.⁸⁶ Institutional innovation does not always solve resource-coordination problems effectively and can create new problems.⁸⁷

84. See, e.g., *2015 Rates*, SOUNDEXCHANGE, <http://www.soundexchange.com/service-provider/rates/> [<http://perma.cc/D6BN-JA4U>]; *Academia Products & Solutions*, COPYRIGHT CLEARANCE CTR., <http://www.copyright.com/academia/> [<http://perma.cc/RDE5-UA5U>]; *Business Products & Solutions*, COPYRIGHT CLEARANCE CTR., <http://www.copyright.com/business/> [<http://perma.cc/M76U-6QRQ>]; *Get an ASCAP License*, AM. SOC'Y COMPOSERS, AUTHORS AND PUBLISHERS, <http://www.ascap.com/licensing/> [<http://perma.cc/WU2D-Z28K>]. In some cases, access and nondiscrimination obligations have been imposed initially by legislation and/or litigation to define the scope of intermediary institutions. See 17 U.S.C. § 114(f) (2012) (defining statutory license for certain digital audio transmissions of sound recordings); *United States v. Broad. Music, Inc.*, 1966 Trade Cas. (CCH) ¶ 71,941 (S.D.N.Y. 1966), as amended, 1996-1 Trade Cas. (CCH) ¶ 71,378 (S.D.N.Y. 1994); *United States v. Am. Soc'y of Composers, Authors & Publishers*, 1950 Trade Cas. (CCH) ¶ 62,595 (S.D.N.Y. 1950); *United States v. Am. Soc'y of Composers, Authors & Publishers*, 1941 Trade Cas. (CCH) ¶ 56,104 (S.D.N.Y. 1941); Jorge L. Contreras, *A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historical Lens*, 80 ANTITRUST L.J. 39 (2015).

85. See Fennell, *Ostrom's Law*, *supra* note 49, at 10–11; Parchomovsky & Siegelman, *supra* note 46, at 248, 251.

86. See Adam J. Levitin & Susan M. Wachter, *Explaining the Housing Bubble*, 100 GEO. L.J. 1177, 1238–42 (2012) (exploring connections between securitization and the 2008 financial crisis); Adam J. Levitin, *The Paper Chase: Securitization, Foreclosure, and the Uncertainty of Mortgage Title*, 63 DUKE L.J. 637 (2013) (explaining how rapidly proliferating and poorly documented mortgage securitization has undermined recording systems for real property); Christopher L. Peterson, *Two Faces: Demystifying the Mortgage Electronic Registration System's Land Title Theory*, 53 WM. & MARY L. REV. 111, 155–56 (2011) (tracing the ways that use of MERS as a clearinghouse for securitization has shifted long-term risk onto consumers and subsequent investors).

87. See Fennell, *supra* note 4, at 1498–1501 (discussing the relationship between institutional design and suboptimal resource access).

The analysis in this Part, though obviously preliminary, suggests a useful perspective on debates about how and why property institutions resemble one another. Property on the ground has no ideal form; it is a vibrant and diverse collection of institutional solutions to resource-coordination problems. The point is not simply that property entitlements are bundles of rights. The “bundle of rights” terminology, while apt for some purposes, often has had the unfortunate effect of making the resource-dependent attributes of property institutions fade into the background.⁸⁸ Property rights are bundles of attributes constructed and assembled for particular purposes, and as such they exhibit systematic patterns. It seems most sensible to understand “property” as an umbrella term covering a set of institutional choices that are related by an emphasis on exclusivity and exchange. Exclusivity, however, varies both in degree and in kind; one may have exclusivity in access, in use, or simply in enjoyment of rents. Similarly, property institutions may facilitate market exchange of title, or may facilitate market exchange of value for different kinds of access and/or use, and society may choose to recognize a variety of public-access privileges. Exclusionary rights, exchange structures, and privileges can be, and generally are, calibrated differently for different resources.

IV. Differences: IP as Itself

So far, we have seen that the family resemblances model of property acknowledges and embraces both similarity and difference. This Part develops an account of IP as different property. Such an account must investigate four important points of departure from the monolithic, land-centric model that has dominated property thinking. First, it must interrogate the assumptions about incentives to production that so often inform theoretical accounts of monolithic property. Incentives do figure importantly in the production of IP, but the monolithic property model does not do justice to the patterns of motivation that surround intellectual production. Second, an account of IP as different property must consider the roles played by different modalities of production, including markets, commons, firms, and hybrid modalities. Intellectual production is fundamentally heterogeneous, which means that property doctrines and institutions tailored to IP need to be correspondingly flexible. Third, the monolithic property model tends to take as given the proposition that its focus should be the linked topics of productive stewardship and governance, and to ignore questions about whether and how beneficial intermediation of subsequent, aggregate, and/or fractional uses will occur. An account of IP as different property cannot do this; intermediation is an

88. For a different critique of the essence-bundle dichotomy, see generally Jeanne L. Schroeder, *Chix Nix Bundle-O-Stix: A Feminist Critique of the Disaggregation of Property*, 93 MICH. L. REV. 239 (1994).

essential function of modern IP institutions. Finally, the contemporary IP system increasingly is populated by hybrid forms that occupy an uneasy space between property and contract. An account of IP as different property must say something about the appropriate roles of such hybrids.

A. *Incentives Unplugged*

Accounts of IP as property typically begin with some version of the incentives-to-production story, so it is useful to begin there. Contemporary incentive-based theories of property derive from the Demsetzian story about property as a corrective to the tragedy of the commons.⁸⁹ Economically speaking, IP presents a variation on the classic form of the tragedy narrative. Because intangible goods are nonrival and nonexclusive, there is no risk of depletion due to overconsumption. The worry, instead, is that nonrivalrousness and nonexclusivity will result in underproduction: that without a way for producers to appropriate economic rents for their efforts, we will have less intangible production and that society will be the poorer for it. Exclusive rights in intellectual goods solve the appropriability problem, supplying incentives for cultural and technical production. (Underproduction narratives about IP tend to skip over questions about how much intellectual production we should want, assuming that more is always better. I will follow their lead, but it is important to note that the optimal amount of intellectual production is unknown and likely unknowable. It is at least arguable that our society overproduces intellectual goods relative to other goods that might improve human well-being more directly and effectively.⁹⁰)

Assuming that the risk of intellectual underproduction is real at least some of the time, the problem is that incentives-to-production reasoning about IP is misleading in two ways. Most of the scholarly criticism has focused on the first, which relates to the connection (or lack thereof) between motivation and economic value. I agree with that critique (and have written some of it), but my point here is different: incentives-to-production reasoning about IP does not support the unitary property paradigm, but instead undermines it. Incentives are important to the production of intellectual goods, but careful attention to the way that incentives play out in the context of intellectual production supports the difference thesis. Understanding intellectual production requires separate accounts of the motivations of initial creators and the incentives of commercializers, and each of those accounts differs in important ways from

89. See *supra* subpart II(A). For a useful overview of Demsetzian reasoning about intellectual property, see Frischmann, *supra* note 50.

90. For exploration of this problem, see generally Glynn S. Lunney, Jr., *Reexamining Copyright's Incentives-Access Paradigm*, 49 VAND. L. REV. 483 (1996).

the account of incentives offered by many economically oriented property theorists.

Conventional accounts of incentives-to-production modeled on the purported relationship between internalization of costs and good stewardship are radically incomplete as to the motivations of creators of intellectual goods. Such accounts explain neither why people create nor what they create. For many, creation is motivated more fundamentally by passion, desire, and play than by economic incentives.⁹¹ Cultural and environmental serendipity also have a great deal to do with the substance of the creative work product; creative people draw inspiration from what they see and hear around them.⁹² Authors and inventors do benefit concretely from employment within creative industries, but the connection between such employment and outlets for creative passion is too often assumed rather than argued for. None of this means that giving copyrights to authors and patents to inventors is a bad idea. It simply means that the simple incentives-to-production story cannot be the reason for giving them. Creative people are happy to receive IP rights, but that is not why they do the work in the first place.

Recognizing the mismatch between incentives-to-production reasoning and the realities of creative practice, some scholars invoke the first-order intermediaries who bring copyrighted works and patented inventions to market. They argue that even if IP is not about incentives for creators, it is quite clearly about incentives for the publishers, movie studios, record labels, pharmaceutical manufacturers, technology firms, and similar entities that invest capital to fund the development, production, and distribution of intellectual goods.⁹³ As we will see below, that strategy comes with complications of its own. Accepting for the moment, however, that incentives to intermediaries matter, still the market-making justification cannot be embraced to its fullest, for that would make IP a very odd sort of property indeed, in which rights are given to one group of people (creators)

91. See generally JESSICA SILBEY, *THE EUREKA MYTH: CREATORS, INNOVATORS, AND EVERYDAY INTELLECTUAL PROPERTY* (2015); Gregory N. Mandel, *To Promote the Creative Process: Intellectual Property Law and the Psychology of Creativity*, 86 NOTRE DAME L. REV. 1999 (2011); Rebecca Tushnet, *Economies of Desire: Fair Use and Marketplace Assumptions*, 51 WM. & MARY L. REV. 513 (2009).

92. See JULIE E. COHEN, *CONFIGURING THE NETWORKED SELF: LAW, CODE, AND THE PLAY OF EVERYDAY PRACTICE* 81–99 (2012). See generally TERESA M. AMABILE, *CREATIVITY IN CONTEXT* (1996); MIHALY CSIKSZENTMIHALYI, *CREATIVITY: FLOW AND THE PSYCHOLOGY OF DISCOVERY AND INVENTION* (1996); PETER GALISON, *EINSTEIN'S CLOCKS, POINCARÉ'S MAPS: EMPIRES OF TIME* (2003); HOWARD GARDNER, *CREATING MINDS* (1993); Mandel, *supra* note 91, at 2011.

93. See generally WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* (2003); Jonathan M. Barnett, *Copyright Without Creators*, 9 REV. L. & ECON. 389 (2014).

in order to provide incentives for a different group of people (market-makers).

A fallback move is to posit that the incentives and interests of creators and market makers are aligned. If that is right, we might avoid having to engage in close study of creators and their unruly motivations and habits. But that move too assumes what ought to be more carefully explored. Market-making and market-clearing are important functions that IP institutions need to facilitate, and creators do benefit from those activities. But we should also note the extent to which the property-in-land model and its synergies with the industrial-era model of intellectual production have operated to force creator and intermediary interests into conceptual alignment, eliding potential conflicts of interest. Such conflicts are not just a theoretical matter; there is plenty of evidence that they exist. To take just a few examples, musicians and record labels have clashed over online distribution of their works, as have academic authors and journal publishers.⁹⁴ Scientists and software developers wanting to change employers have found themselves embroiled in disputes over trade secrets and other confidential materials.⁹⁵

If we can neither write authors and inventors out of the entitlement equation nor conflate their interests with those of intermediaries, then property thinking about IP must confront two questions. First, we need a non-incentive-based theory about who deserves to be given IP rights, and under what circumstances. Natural rights theories of IP offer answers to these questions that turn on labor and personhood, but such theories are widely criticized as based on discredited models of romantic authorship.⁹⁶

94. See Stephen Adams, *Pink Floyd Stops EMI from Cutting up Albums Online*, TELEGRAPH (Mar. 11, 2010, 1:45 PM), <http://www.telegraph.co.uk/culture/music/music-news/7421247/Pink-Floyd-stops-EMI-from-cutting-up-albums-online.html> [<http://perma.cc/RRP8-NGXC>]; Gary Graff, *Def Leppard Recording 'Forgeries' of Old Hits to Spite Label*, BILLBOARD (July 2, 2012, 6:15 PM), <http://www.billboard.com/articles/news/482195/def-leppard-recording-forgeries-of-old-hits-to-spite-label> [<http://perma.cc/S63G-VPTY>]; Guy Gugliotta, *Gulf on Open Access to Federally Financed Research*, N.Y. TIMES (Feb. 27, 2012), <http://www.nytimes.com/2012/02/28/science/a-wide-gulf-on-open-access-to-federally-financed-research.html?pagewanted=all> [<http://perma.cc/BWF6-VNU2>]; Thomas Lin, *Mathematicians Organize Boycott of a Publisher*, N.Y. TIMES (Feb. 13, 2012), <http://www.nytimes.com/2012/02/14/science/researchers-boycott-elsevier-journal-publisher.html> [<http://perma.cc/L8Y2-6AF5>]; Bobby Owsinski, *Beyonce Fights Back Against The Amazon/Target Boycott*, FORBES (Dec. 23, 2013, 7:00 AM), <http://www.forbes.com/sites/bobbyowsinski/2013/12/23/beyonce-fights-back-against-the-amazontarget-boycott> [<http://perma.cc/N4EE-YDWF>].

95. See ORLY LOBEL, TALENT WANTS TO BE FREE: WHY WE SHOULD LEARN TO LOVE LEAKS, RAIDS, AND FREE RIDING 108–17 (2013).

96. Leading examples of natural rights theorizing about IP are Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533 (1993); Roberta Rosenthal Kwall, *Inspiration and Innovation: The Intrinsic Dimension of the Artistic Soul*, 81 NOTRE DAME L. REV. 1945 (2006); Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History 1550–1800*, 52 HASTINGS L.J. 1255 (2001); Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents: Reevaluating the*

Reliance on romantic notions of creativity is not necessary to solve the allocation problem, however, because distributive considerations also come into play. Most minimally, as between creators and first-order intermediaries, in most cases it would seem distributively unfair simply to give rights to intermediaries and leave creators to fend for themselves, and that is so whether or not creators need incentives to create. In theory at least, giving copyrights to authors and patents to inventors avoids economic exploitation and the corresponding demoralization costs.⁹⁷ There is also a broad egalitarianism at work in a system of legal rules that recognizes a kind of property that can be earned by using one's mind. The devil is in the details, but if the system is well constructed we might be able to say that giving copyrights to authors and patents to inventors serves expressive functions that relate to distributive justice and to the democratization of ownership.

Second, if we are going to acknowledge the importance of copyright and patent in avoiding demoralization costs to initial creators, we need to acknowledge that those costs also need not be incentive related but can originate in perceived offenses to other important values. As many scholars have argued, one can demoralize authors with rules about scope that are too strict and that unnaturally constrain the scope for creative or inventive practice.⁹⁸ In the context of copyright, I have called this effect on creative practice copyright's "obstructive function": assigning rights that are too broad can impede subsequent creation, producing costs that are both economic and noneconomic.⁹⁹ Patent rules can have similar effects on inventors; one aspect of the patent system that has come in for repeated criticism is its failure to provide a robust experimental use doctrine.¹⁰⁰

Patent "Privilege" in Historical Context, 92 CORNELL L. REV. 953 (2007). Prominent critiques include BOYLE, *supra* note 22; Peter Jaszi, *On the Author Effect: Contemporary Copyright and Collective Creativity*, in THE CONSTRUCTION OF AUTHORSHIP: TEXTUAL APPROPRIATION IN LAW AND LITERATURE 29 (Martha Woodmansee & Peter Jaszi eds., 1994); Lemley, *supra* note 22.

97. Cf. Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L. REV. 1165, 1214 (1967) (coining the term "demoralization costs" in the context of eminent domain proceedings).

98. See generally, e.g., JAMES BOYLE, *THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND* (2008); LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* (2001); Julie E. Cohen, *Copyright, Commodification, and Culture: Locating the Public Domain*, in THE FUTURE OF THE PUBLIC DOMAIN: IDENTIFYING THE COMMONS IN INFORMATION LAW 121, 157–59 (Lucie Guibault & P. Bernt Hugenholtz eds., 2006); David Lange, *At Play in the Fields of the Word: Copyright and the Construction of Authorship in the Post-Literate Millennium*, LAW & CONTEMP. PROBS., Spring 1992, at 139.

99. See Cohen, *Copyright as Property*, *supra* note 2, at 149.

100. See Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1672–74 (2003); Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CALIF. L. REV. 1, 29–30 (2001); Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1109–10 (2003); Katherine J. Strandburg, *What Does the Public Get? Experimental Use and the Patent Bargain*, 2004 WIS. L. REV. 81, 87–88.

Other demoralization costs are distributive; demoralization can flow from transfer rules that are structurally unfair.

So much for authors; what about intermediaries? Surely it cannot be wrong to think that economic incentives matter to market makers for intellectual goods? That instinct has some history on its side: the IP regimes that evolved during the twentieth century were designed to facilitate industrial production and dissemination of intangible goods at a time when the industrial model was the only effective means of achieving those goals. Incentive talk about market makers for IP is rooted in a set of intellectual production practices that is historically contingent but well established. Yet the conventional account of the incentives of market makers also is far too simple, because it ignores a group of uncertainty problems that are unique to intellectual production. No single intermediary can manage all of those uncertainties on its own. For that reason, intellectual-production practices spawn complex sets of relationships. The task of IP law is to mediate those relationships without making any single actor all-important.

The first set of uncertainty problems surrounds the creation process. Creation of intellectual goods depends first and foremost on inspiration, which is difficult to predict and monetize. Within the industrial model of intellectual production, firms hedge their bets by constructing portfolios of intangible assets and exploiting the synergies within the portfolios.¹⁰¹ But, as subpart IV(B) will discuss in more detail, the goal of predicting production by creative employees within firms remains elusive. Creators from outside firms also require access to creative and inventive inputs, moreover, and here doctrinal formulations motivated by the industrial copyright and patent models can produce results that are absurd when considered in light of the history and sociology of art and science. Studies of creative practice have shown that borrowing and appropriation play central roles for creators and that great artists and inventors have routinely behaved in ways that would qualify as infringement by today's standards. While some contemporary creators do seek permission and pay licensing fees, many others borrow and appropriate, relying on the creative norms of their communities to protect them.¹⁰² That strategy can be risky. Some

101. See Benkler, *supra* note 40, at 92 (discussing copyrights); Parchomovsky & Wagner, *supra* note 40, at 32–37 (discussing patents).

102. See MIEKE BAL, QUOTING CARAVAGGIO: CONTEMPORARY ART, PREPOSTEROUS HISTORY (1999); DANIEL J. BOORSTIN, THE CREATORS 651 (1992); COHEN, *supra* note 92, at 87–88, 97; CORNELIA HOMBURG, THE COPY TURNS ORIGINAL: VINCENT VAN GOGH AND A NEW APPROACH TO TRADITIONAL ART PRACTICE 70–72 (1996); Olufunmilayo B. Arewa, *From J.C. Bach to Hip Hop: Musical Borrowing, Copyright and Cultural Context*, 84 N.C. L. REV. 547, 601–07 (2006); J. Peter Burkholder, *The Uses of Existing Music: Musical Borrowing as a Field*, 50 NOTES 851, 854 (1994); Paul Edward Geller, *Hiroshige vs. Van Gogh: Resolving the Dilemma of Copyright Scope in Remediating Infringement*, 46 J. COPYRIGHT SOC'Y U.S.A. 39, 39–40 (1998).

artistic and inventive communities are less litigious than others, but norms also change, and norms will not necessarily protect creators who draw inspiration from commercial culture.¹⁰³

A second set of uncertainties that confronts intermediaries relates to market reception. It is notoriously difficult to assess the merits of creative and inventive products. Economic theorizing about IP, and about property more generally, tends not to concern itself with the processes by which end users of intellectual goods assess merit,¹⁰⁴ but those processes are well worth exploring more carefully. Markets for creative works often revolve around the inputs of tastemakers such as museums, galleries, and critics.¹⁰⁵ Copyright law and informal norms have developed in ways that accommodate the various functions that need to be performed—display by museums and in galleries, fair use by critics, and so on. Intermediaries such as publishers and movie studios can internalize some of those tastemaking functions, but not all. On the technical side, the processes of diffusion are equally complex. Patent doctrine and theory recognize that technical inventiveness does not necessarily predict commercial success, and that commercial success therefore cannot be the sole criterion for evaluating nonobviousness, but patent law has paid less attention to the question of what does predict commercial uptake.¹⁰⁶ In addition, because intellectual production is characterized by large spillovers, market valuations may be inaccurate, which means that market exchange will not always be the best vehicle for promoting cultural and technical progress.

A final set of uncertainties relates to mechanisms for distributing and experiencing intellectual goods. Existing IP regimes depend heavily on intermediaries to move copyrighted creations and patented inventions to their optimal mix of uses. First-order intermediaries such as publishers and

103. For some examples of litigation against visual artists, see *Cariou v. Prince*, 714 F.3d 694 (2d Cir. 2013); *Blanch v. Koons*, 467 F.3d 244 (2d Cir. 2006); *Rogers v. Koons*, 960 F.2d 301 (2d Cir. 1992); *Campbell v. Koons*, No. 91 Civ. 6055(RO), 1993 WL 97381 (S.D.N.Y. Apr. 1, 1993); *United Feature Syndicate, Inc. v. Koons*, 817 F. Supp. 370 (S.D.N.Y. 1993); Randy Kennedy, *Shepard Fairey and the A.P. Settle Legal Dispute*, N.Y. TIMES (Jan. 12, 2011), <http://www.nytimes.com/2011/01/13/arts/design/13fairey.html> [<http://perma.cc/2PD9-QLPY>]. For examples of disputes involving borrowing by musicians, see *Swirsky v. Carey*, 376 F.3d 841 (9th Cir. 2004); *LaChapelle v. Fenty*, 812 F. Supp. 2d 434 (S.D.N.Y. 2011); Robert Hilburn, *The Bittersweet Smell of Success*, L.A. TIMES (Mar. 29, 1998), <http://articles.latimes.com/1998/mar/29/entertainment/ca-33819> [<http://perma.cc/7SMJ-Q5S3>]; Dave Itzkoff, *Joe Satriani Drops Lawsuit Against Coldplay*, N.Y. TIMES: ARTS BEAT (Sept. 16, 2009, 11:17 AM), <http://artsbeat.blogs.nytimes.com/2009/09/16/joe-satriani-drops-lawsuit-against-coldplay> [<http://perma.cc/4WNV-6YDS>].

104. COHEN, *supra* note 92, at 68–69.

105. For detailed discussion, see HOWARD S. BECKER, ART WORLDS 131–64 (1982); and RICHARD E. CAVES, CREATIVE INDUSTRIES: CONTRACTS BETWEEN ART AND COMMERCE 189–200 (2000).

106. For one useful summary of relevant factors, see Jacob Goldenberg, Donald R. Lehmann & David Mazursky, *The Idea Itself and the Circumstances of Its Emergence as Predictors of New Product Success*, 47 MGMT. SCI. 69 (2001).

movie studios are not always the parties best equipped to accomplish the goal of broad dissemination.¹⁰⁷ This is particularly true in the digital context, where the design of state-of-the-art intermediation systems requires considerable technical expertise. We will return to the phenomenon of intermediation in subpart IV(C), below; for now, simply note that the incentives of distribution intermediaries cannot be dismissed as less important than those of the first-order market makers with whom the IP system has more traditionally been concerned. This means that IP regimes will require methods of mediating conflicts between first-order and subsequent intermediaries and between current players and would-be market entrants.

When evaluating incentives-to-production reasoning as a justification for IP, it is useful to remember that incentive talk about copyrights and patents is also expressive talk. To borrow from Carol Rose, it is a way of expressing our thoughts about the entitlements of authors and commercial intermediaries “within a structure of symbols approved and understood by a commercial people.”¹⁰⁸ Incentive talk about IP says something important about how we understand ourselves. But if so, then when we invoke incentives we are not simply disinterested observers. In designing effective legal institutions for IP, it is important to look beyond the narrative to the realities of intellectual production: to understand the mix of motivations and uncertainties that intellectual production puts into play.

B. *Heterogeneous Ecologies of Production*

There is a more fundamental problem with the incentives-to-production reasoning that features so prominently within IP discourse and within property discourse more generally: it highlights the importance of market motivations for the production of intellectual goods but downplays both the importance of other modalities of production and the roles that property institutions play in enabling and mediating between the different modalities. Important scholarship on IP has challenged the bias toward an undifferentiated, market-centered view of production, arguing that firms, commons, and hybrid modalities all play important roles in the production of intellectual goods. Mainstream property theory has engaged very minimally with these developments. When one considers the dominance of the land-centric model of property, that omission is unsurprising. In the

107. In the United States, broad dissemination is a key aspect of the constitutional authorization for copyright and patent protection. See Malla Pollack, *What Is Congress Supposed to Promote?: Defining “Progress” in Article I, Section 8, Clause 8 of the United States Constitution, or Introducing the Progress Clause*, 80 NEB. L. REV. 754, 779–808 (2001).

108. Carol M. Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73, 88 (1985); see also Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 771–72 (1986) [hereinafter Rose, *Comedy of the Commons*] (discussing the various ways that common resources have facilitated economic development).

United States, the universe of available land is finite. Firms do not produce it, and true common ownership is largely a thing of the past. The organization of production is an important topic for both corporate property and natural resources property, however. Exploring that topic within the broader context of the property family tree suggests some important lessons for an account of IP as property. The landscape of intellectual production is both extraordinarily heterogeneous and extraordinarily dependent on spillovers. Legal institutions for IP must facilitate a vibrant, interdependent mix of production modalities, and this requires them to be both versatile and incomplete.

Economists have long recognized the importance of the firm as a modality of production of goods, services, and wealth. Both theoretically and practically, the existence and continued operation of firms demonstrates that in certain circumstances the hierarchical organization of production is more efficient than market production would be.¹⁰⁹ Similarly, it is well recognized that organizing intellectual production within firms can eliminate certain kinds of transaction and holdup costs, enabling productive innovation to proceed.¹¹⁰

What, though, does the organization of production within firms have to do with a typology of property? It is useful to begin with a variation on Demsetz's foundational observation about the emergence of property rights,¹¹¹ reframing that observation as one about the emergent relationship between resources, appropriation strategies, and legal institutions: new or newly important resources have a way of engendering new appropriation strategies, and new appropriation strategies have a way of engendering legal accommodation. The corporation emerged as a practical mechanism for aggregating resources to fund large-scale production activities and gradually became a durable legal mechanism for enabling investors to recognize and appropriate returns—for constituting corporate property. Firms may produce widgets or send communications satellites into orbit, but they also produce themselves, and corporate law is both a form of enterprise regulation and a form of property law. As a form of property

109. See R. H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386, 398–401 (1937).

110. See Ashish Arora & Robert P. Merges, *Specialized Supply Firms, Property Rights and Firm Boundaries*, 13 *INDUS. & CORP. CHANGE* 451, 452 (2004); Robert P. Merges, *The Law and Economics of Employee Inventions*, 13 *HARV. J.L. & TECH.* 1, 12–13 (1999). See generally Oliver Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 *J. POL. ECON.* 1119 (1990). Other transaction and holdup costs, such as those involved in assuring the quality of purchased or licensed inputs, are more intractable. Sociologists who study corporate production have found that firms rely on networks mediated by personal relationships to address input quality issues. See Walter W. Powell, *Neither Market nor Hierarchy: Network Forms of Organization*, 12 *RES. ORGANIZATIONAL BEHAV.* 295, 304 (1990); Laurel Smith-Doerr & Walter W. Powell, *Networks and Economic Life*, in *THE HANDBOOK OF ECONOMIC SOCIOLOGY* 379, 392 (Neil J. Smelser & Richard Swedberg eds., 2d ed. 2005).

111. See *supra* text accompanying notes 13, 56–61.

law, corporate law mediates the processes of production and value extraction by subjecting them to rules about the allocation of rents, authority, and accountability between managers and shareholders.

The relationship between firms as modalities of production and legal institutions for IP is slightly more complicated for two reasons. The first reason returns us to the double-incentive problem discussed in subpart IV(A), above. Intellectual goods produced in firms must be created by people, and because of the difficulties that surround predicting and motivating intellectual production, contracts for intellectual production are necessarily incomplete. IP entitlements can fill the gaps by specifying default allocations between human creators and firms, and creative employees can be rewarded based on the IP that they generate.¹¹² But because IP entitlements are inexact proxies for motivation and inspiration, they represent a second-best solution to the problem of how to motivate and reward the creative employee.¹¹³

The second complication stems from the fact that when firms produce and use intellectual goods, multiple kinds of production are involved. As Dan Burk and Brett McDonnell explain, the relationship between firms and IP rights is endogenous: the contours of IP rights affect both intrafirm and intramarket efficiency and therefore will shape decisions about the optimal organization of production.¹¹⁴ In particular, although IP rights are important ways of appropriating value, such rights also can generate transaction costs and holdup costs of their own. This is especially true in industries where production requires multiple and/or overlapping licenses. The result is what Burk and McDonnell call the “Goldilocks problem”: to optimize intellectual production within firms, IP rights should be neither too weak nor too strong.¹¹⁵ So far, so good, but there is an additional optimization problem that they do not consider, which relates to the optimal level of wealth production overall. IP scholars tend to assume that the optimal level of intellectual production is simply “more.” That, though, doesn’t square with the way that firms behave, a fact that has puzzled IP scholars but can

112. See Anthony J. Casey & Andres Sawicki, *Copyright in Teams*, 80 U. CHI. L. REV. 1683, 1701–12 (2013); Paul J. Heald, *A Transaction Costs Theory of Patent Law*, 66 OHIO ST. L.J. 473, 478–99 (2005); Merges, *supra* note 110, at 38–41.

113. For discussion of alternative reward systems, see Anthony J. Casey, *Mind Control: Firms and the Production of Ideas*, 35 SEATTLE U. L. REV. 1061, 1083 (2012); Catherine L. Fisk, *The Modern Author at Work on Madison Avenue*, in MODERNISM AND COPYRIGHT 173, 190–94 (Paul K. Saint-Amour ed., 2011).

114. Dan L. Burk & Brett H. McDonnell, *The Goldilocks Hypothesis: Balancing Intellectual Property Rights at the Boundary of the Firm*, 2007 U. ILL. L. REV. 575, 577, 591–99; see also Arora & Merges, *supra* note 110, at 451–56 (discussing the ways that intellectual property rights affect firm strategies); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990) (evaluating the historical effect of patent availability on innovation and industry structure in several industries).

115. Burk & McDonnell, *supra* note 114, at 613–20.

be explained quite simply by the fact that firms are engaged first and foremost in producing themselves, and so intellectual production per se generally is not what they are attempting to maximize. Intellectual goods are inputs into the production of corporate wealth, while corporate resources are inputs into the production of intellectual goods. It may not be possible to maximize both at the same time.¹¹⁶

Together, the problem of incomplete contracting and the problem of multiple optima go a long way toward explaining both the systematic heterogeneity and the instability of IP markets. Different industries have struck different balances—for example, motion picture production is firm intensive at every stage, while trade publishers typically play the far more limited role of market makers for finished manuscripts—yet those balances are easily disrupted by new technologies, distribution platforms, and business models. The music industry, where different rights traditionally have been held by different intermediary firms, has presented a particularly acute case of instability.¹¹⁷

Our account of the landscape of intellectual production is not yet complete, however. As Yochai Benkler has shown, situating the problem of production within the Coasean make-or-pay framework assumes a two-part universe of possibilities, in which value is produced (and controlled) either within firms or outside the boundary of the firm in atomistic, undifferentiated markets. Benkler offers a very different account of value generation: a story about commons-based production by distributed, nonhierarchical groups of peers.¹¹⁸ While many intellectual goods are produced by firms, many others are produced in commons arrangements. As Benkler explains, certain types of intellectual production are especially well suited to peer production.¹¹⁹

Although Benkler's account of commons-based production is focused primarily on intellectual and social production, commons-based production also features prominently in another branch of the property family tree. As discussed in subpart II(B), above, scholarship on natural resources property has long grappled with the potential and limits of the commons as a mode of production. Many kinds of natural resources property are owned or managed in common pools. Some resources (e.g., oil and minerals) are finite, but others (e.g., water and fisheries) are renewable in ways dependent on common activity. As was the case for firm-based production, recognition of the commons as an important modality of production prompted

116. This observation raises interesting policy questions, but they are outside the scope of this project.

117. See Loren, *supra* note 83, at 698–702.

118. YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 59–90 (2006).

119. See *id.* at 99–106.

institutional evolution. In some circumstances stakeholders have developed institutions to govern resource use and management in ways that foster sustainability, while in others sustainable management has required more complex regulatory regimes.

Commons-based production modalities do not respond to profit motivation in the same ways that market-based production modalities do, and do not simultaneously produce themselves as property in the same ways that firms do. For all that, commons cannot be dismissed as a lesser type of intellectual-production regime, as some scholars have suggested.¹²⁰ It is certainly true that some types of capital-intensive intellectual production—of blockbuster motion pictures and pharmaceuticals, for example—occur almost exclusively in firms. But commons are fundamental to ecologies of intellectual production.

Commons are both the substrate out of which intellectual production emerges and the circulatory system through which continuing cultural and technical production moves. Fundamental building blocks like cultural archetypes and basic science, which underlie all cultural participation and technical innovation, traditionally have been managed as commons.¹²¹ But descriptions of the relationship between commons and the market–firm dyad that stop after cataloguing those building blocks are incomplete (and consequently the “building blocks” metaphor is open to serious question). Spillovers between firms, markets, and commons go in all directions. Firms benefit from access to continuing production in the commons, and firm-produced intellectual goods ranging from technical protocols to computer desktop layouts to popular songs to the characters in blockbuster Hollywood movies also serve as common cultural and technical currency.¹²² In addition, commons-based production generates various kinds of social and reputational capital, with important effects on the processes of tastemaking and intermediation discussed in subpart IV(A), above.¹²³

120. See Barnett, *supra* note 41 (arguing that firms are the appropriate targets of copyright incentives because they can amass the capital that intellectual production demands); Peter P. Swire, *The Consumer as Producer: The Personal Mainframe and the Future of Computing*, LAW/TECH., 1st Quarter 2009, at 5, 32–35 (arguing that commons-based production is a startup-phase phenomenon and that in the mature phase, market production and market motivations inevitably crowd out commons).

121. See generally FRISCHMANN, *supra* note 74, at 275–301.

122. See COHEN, *supra* note 92, at 82–99; Yochai Benkler, *Between Spanish Huertas and the Open Road: A Tale of Two Commons?*, in GOVERNING KNOWLEDGE COMMONS 69 (Brett M. Frischmann, Michael J. Madison & Katherine J. Strandburg eds., 2014) (formalizing the analysis of *Comedy of the Commons* and extending it to intangible and intellectual resources); Rose, *Comedy of the Commons*, *supra* note 108, at 716–22 (discussing the ways that various types of inherently public property benefit society).

123. See Niva Elkin-Koren, *Tailoring Copyright to Social Production*, 12 THEORETICAL INQUIRIES L. 309, 323–26 (2011).

Participants in intellectual production recognize the pervasive interrelationship between different production modalities, and sometimes take steps to safeguard commons against incursions by one or more of the other modalities. The most well-known example of a defensive mechanism is the open-source software license's "share-alike" requirement for derivative works, but many intellectual-production arrangements involve constructed commons: more or less formalized resource-sharing arrangements that are contractually defined.¹²⁴ Participants in constructed commons can be nonprofit entities, such as universities, for-profit institutions, such as companies in a patent pool, or a mixture, such as firms and universities in technology-transfer arrangements. In Brett Frischmann's terminology, participants in such arrangements have identified the relevant resources as intellectual infrastructure—i.e., as necessary inputs into a wide range of private and social production—and therefore have elected to manage them as commons.¹²⁵

The interrelatedness of intellectual-production modalities has two important implications for the design of IP institutions. First, in the interest of promoting the development and continuing evolution of common cultural and technical currency, IP institutions should facilitate spillovers.¹²⁶ It follows that IP rights and remedies should be incomplete by design, and that those charged with administering them should not single-mindedly interpret their own mission as that of clearing the way for rightholder efforts to capture or contain spillover effects. Henry Smith identifies a category of resources that he calls "semicommons" because they mingle private property rights and common usage rights.¹²⁷ As Smith explains, from the perspective of modularity theory, common usage rights introduce inter-modular governance complications, and therefore make sense only to the extent that they do not interfere with primary productive use by private rightholders. That reasoning is powerfully shaped by land-centric property thinking, within which public-use rights are generally residual and peer-produced development is relatively rare. The landscape of intellectual production often reverses those baselines, however, and so it is important to study both interferences and synergies carefully.

Second, IP institutions regularly will confront intense pressures to simplify entitlement design. If we return to the core insight about the

124. See Peter Lee, *Transcending the Tacit Dimension: Patents, Relationships, and Organizational Integration in Technology Transfer*, 100 CALIF. L. REV. 1503, 1540–45 (2012); Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, *Constructing Commons in the Cultural Environment*, 95 CORNELL L. REV. 657, 699–704 (2010).

125. See FRISCHMANN, *supra* note 74, at 3–23.

126. See Frischmann & Lemley, *supra* note 50, at 271–84 (discussing the benefits of IP spillovers for society).

127. Smith, *supra* note 26, at 138–44; see also Smith, *Institutions and Indirectness*, *supra* note 14, at 2111 (characterizing certain patent joint ventures as semicommons).

emergent relationship between resources, appropriation strategies, and legal institutions with which this section began, we can see that the legal institutions for IP will come under much greater pressure than the corresponding legal institutions for property in land do. All property regimes experience rent-seeking, but the sheer heterogeneity of intellectual production multiplies both incentives for rent-seeking and opportunities to behave strategically. Firms that engage in intellectual production will seek comparative advantage by amassing IP portfolios that can serve as inputs to the production process and may develop a variety of offensive and defensive strategies that involve the assertion (and, sometimes, the nonassertion) of IP rights.¹²⁸ Rightholder firms also engage in a variety of legislative and litigation strategies designed to shape the contours of IP institutions to their benefit.¹²⁹ Commons-based regimes of production, meanwhile, are vulnerable both to moral hazard and to outright defection, and so it is not surprising to see intense debate about how to develop defense mechanisms. The software industry, which straddles the firm–commons divide, has experienced these problems acutely. Open-source communities have wrestled publicly with questions about how to handle proprietary developers' incorporation of open modules and how to respond to the increasing prevalence of software patents.¹³⁰

How IP institutions should respond to the conflicting needs and demands of participants in intellectual-production ecologies is a difficult question but one that this Article need not answer. For my purposes here, it is enough to conclude that simple, land-centric narratives about the relationship between crisply defined property rights and rules, on one hand, and productive use and development, on the other, do not help very much. If complexity is a value in itself, then the fact that the landscape of intellectual production is characterized by high spillovers and pronounced and persistent rent-seeking does not necessarily counsel in favor of simpler entitlements. The heterogeneity of intellectual production is a feature, not a bug, and that counsels caution about the optimal institutional forms for IP.

128. See Benkler, *supra* note 40, at 90–93 (describing strategies involving copyrights and related rights); Parchomovsky & Wagner, *supra* note 40, at 27–41 (describing patent strategies).

129. See JESSICA LITMAN, DIGITAL COPYRIGHT 166–91 (2001); Jessica D. Litman, *Copyright, Compromise, and Legislative History*, 72 CORNELL L. REV. 857, 870–79 (1987); Xuan-Thao Nguyen, *Dynamic Federalism and Patent Law Reform*, 85 IND. L.J. 449, 472–83 (2010); Robert E. Thomas, *Vanquishing Copyright Pirates and Patent Trolls: The Divergent Evolution of Copyright and Patent Laws*, 43 AM. BUS. L.J. 689, 706–38 (2006).

130. See David S. Evans & Anne Layne-Farrar, *Software Patents and Open Source: The Battle Over Intellectual Property Rights*, 9 VA. J.L. & TECH. 10, ¶¶ 17–22 (2004) (discussing problems that arise when open-source code is mingled with licensed code); Christian H. Nadan, *Open Source Licensing: Virus or Virtue?*, 10 TEX. INTELL. PROP. L.J. 349, 353–55, 371–73 (2002) (discussing the implications of software patents for the open-source software movement).

C. *The Importance of Intermediation*

So far, I have considered only the problem of production—of bringing into being something that did not exist before. Now notice a different kind of heterogeneity within the IP system: the landscape is populated by a variety of entities, established and new, that do not engage in intellectual production, but instead function as intermediaries, coordinating the distribution and use of intellectual goods produced by others. Nor is the rise of intermediaries a recent development. Intermediaries are a central feature of modern IP regimes.

From the beginning of the modern era, debates about copyright policy have concerned the relationship between authors and production intermediaries (such as publishers, motion picture producers, and record labels). Some of the reasons are structural: a production intermediary can perform well some tasks that authors themselves perform very poorly (and so in some circles it has become customary to describe cultural goods in terms of production value). Other reasons are contingent on particular configurations of technical and economic power: in the industrial era of copyright, even production in markets required intermediation by firms. Intermediation is equally traditional within the patent system, where it is done principally by the employers who assemble research teams and secondarily by industry-specific patent pools and standards organizations.

In contrast, for most of its history the American system of land ownership required only relatively basic forms of intermediation.¹³¹ Perhaps for that reason, the problems associated with intermediation of access and use have not been particularly salient for most property scholars. When one looks beyond the land-centric paradigm for property, however, more complex forms of intermediation are a prominent feature of the property family tree. The history of corporate property is one of progressively more sophisticated and efficient intermediation between capital and production. As discussed in subpart II(B), above, as the demand for natural resources has grown and diversified, natural resources property also has posed increasingly important and difficult intermediation problems. Unlike the intermediation problems that corporate property confronts, those characteristic of natural resources property more typically concern the allocation of scarce resources among competing claimants.¹³²

One view of the intermediation function of modern IP regimes is that it simply continues the pattern established by the regime of corporate property. On that view, one can liken Titles 17 and 35 of the US Code to Delaware's corporations law, and conclude that the central purpose of the

131. For a useful overview of the history of housing finance from the New Deal onward, see generally Adam J. Levitin & Susan M. Wachter, *The Public Option in Housing Finance*, 46 U.C. DAVIS L. REV. 1111 (2013).

132. See *supra* section III(A)(4).

industrial model of IP is to enable the provision of capital and organization so that creative works and inventions can be brought to market and exploited.¹³³ We might say more generally that copyright separates authorship from control of creative works so that certain kinds of coordination problems can be solved, while patent law performs the analogous function for technical inventions. This model aligns well with what I have been calling the industrial-era model of intellectual production and particularly with the production of IP within firms.

The problem is that the corporate-law analogy overlooks several other important features of contemporary ecologies of intellectual production and consumption. In the Internet era, an account of copyright organized around intermediation by market makers for original works in full and unaltered form seems antiquated. Modern copyright is not only or even primarily about the relationship between authors and first-order publishing intermediaries. Central figures in the modern copyright ecosystem include collective rights organizations, equipment manufacturers, and online service providers. Central figures in the modern patent system include patent pools, research consortia, and technical standards organizations. In both cases, the generic term “intermediation” encompasses a wide variety of functions. Licensed uses may be fractional (for copyrighted works),¹³⁴ cumulative (for patented inventions),¹³⁵ or both fractional and cumulative (copyrighted works, again).¹³⁶ Intermediary firms do not simply come into being to outperform other market makers; they also constitute new markets.

A different way of thinking about IP as an intermediation regime would push beyond the industrial-property analogy to give these developments their due. Many information goods require multiple licensed inputs. Rather than automatically privileging the upstream intermediaries that we have come to think of as producer firms, perhaps we ought to think of the copyright and patent ecosystems as comprised of a heterogeneous and often-changing assortment of intermediary firms. Here the system of IP rights is more like a water rights management scheme, which must mediate between competing and incommensurable uses. Yet the natural resources analogy does not fully describe ecologies of intellectual production and consumption, either, because uses of intellectual goods are nonrivalrous and generate a more heterogeneous variety of network effects.¹³⁷

133. See 17 U.S.C. §§ 101–1310 (2012) (Copyright Act); 35 U.S.C. §§ 101–390 (2012) (Patent Act); Barnett, *supra* note 93, at 405–14; Kitch, *supra* note 20, at 276–78.

134. As in the case of synchronization licenses for musical works to be included in motion picture, television, and advertising soundtracks.

135. As in the cases of computer operating systems and digital media players.

136. As in the case of documentary filmmaking.

137. See generally Frischmann & Lemley, *supra* note 50, at 272–74, 279–82.

In short, the importance and variety of intermediation-based business models and communities within IP law and practice strongly suggest that a theory of IP as property cannot simply be based on a story about internalizing costs and benefits to achieve optimal returns to producers and first-order market makers, as it is within the industrial-era model of IP. The principal challenge that IP legal regimes confront is not solving the production problem, but solving production and intermediation problems together.¹³⁸ Practically speaking, this suggests that the landscape of intellectual production will be much more volatile, changing relatively frequently as new intermediaries and new uses emerge. From a more abstract perspective, it raises the possibility that coordination in the context of IP might be understood to require a double separation of ownership from control—an initial transfer from creator to market maker followed by subsequent inclusion within an intermediation regime. This characteristic of modern IP regimes militates strongly in favor of liability rules for at least some types of uses, and liability rules ought to be understood not simply as a remedial option that redistributes transaction costs, but rather, and more fundamentally, an institutional option that determines resource access costs.¹³⁹

Economic theory's conventional answer to this problem, in response to the multiple-takers scenario, is that monistic property necessarily precedes intermediation. The practical objection to multiple-takers arrangements has two principal strands. One has to do with the distribution of transaction costs; it is thought to be undesirable for the owner to have to pay off multiple takers.¹⁴⁰ This is only true, however, if widespread licensing is undesirable; in an ecology dominated by cumulative and fractional uses,

138. For a good discussion of the problem of excessively fragmented control, see Molly Shaffer Van Houweling, *Author Autonomy and Atomism in Copyright Law*, 96 VA. L. REV. 549, 571–74 (2010).

139. Two useful explorations of liability rules as a tool for solving some of the distributive problems in digital copyright are WILLIAM W. FISHER III, *PROMISES TO KEEP: TECHNOLOGY, LAW, AND THE FUTURE OF ENTERTAINMENT* (2004); and Neil Weinstock Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J.L. & TECH. 1 (2003). On the potential of liability regimes for software, technical know-how, and data, see J.H. Reichman & Pamela Samuelson, *Intellectual Property Rights in Data?*, 50 VAND. L. REV. 51, 72–110 (1997); and J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432, 2504 (1994).

140. Within the IP literature, the classic treatment is Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293 (1996). For discussion of the multiple-takers problem within the literature on the law and economics of property rights, see Ian Ayres & Eric Talley, *Distinguishing Between Consensual and Nonconsensual Advantages of Liability Rules*, 105 YALE L.J. 235 (1995); Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 YALE L.J. 1027 (1995); Louis Kaplow & Steven Shavell, *Do Liability Rules Facilitate Bargaining? A Reply to Ayres and Talley*, 105 YALE L.J. 221 (1995); Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713 (1996).

that may not be the case. In addition, to the extent that IP intermediaries reduce resource access costs, they are more likely to enable the creation of independent value. Consider, for example, the way that music publishers facilitate synchronization licensing of musical compositions in the soundtracks for audiovisual works, or the way that requirements of reasonable and nondiscriminatory licensing instituted by technical standards organizations have enabled industry coordination around shared protocols for information exchange.¹⁴¹

Another kind of objection to multiple-takers solutions to intermediation problems concerns the extent to which multiple takers can dilute the value of intangible assets. Scholars who subscribe to this objection maintain that, in an era in which reputation is everything, there really is no such thing as nonrivalrous use.¹⁴² Given that industrial IP owners themselves engage in nearly ubiquitous branding and versioning, that objection is increasingly hard to maintain with a straight face. But even if we credit it with some force, it is still important to balance the costs against other kinds of costs that can result from too much control. Even taking (hypothetical) value-lessening uses into account, institutional design that erects barriers to access may result in suboptimal levels of resource use overall.¹⁴³

Intermediation via liability rules does not accommodate all needs and uses that arise within an IP system. In particular, liability regimes may create difficulties for certain types of commons-based production and for the various types of noncommercial production that rely on spillovers from commercial copyright or patent regimes. Examples of the former include open-source software projects; examples of the latter include user-generated content as a form of cultural participation.¹⁴⁴ Intellectual goods may achieve their highest social value when licensed as inputs for multiple and overlapping uses, while still other uses are allowed to remain nonexcludable. This point, however, should not detract from more careful study of liability-based intermediation rules for IP regimes.

The multiple-takers arrangements that liability rules permit also do not eliminate strategic behavior from the resource-access equation. Instead, the multiple-takers scenario can generate its own forms of moral hazard. At the patent/trade-secret interface, multiple-takers arrangements may create incentives to prefer trade secrecy over disclosure, undercutting the system

141. See Contreras, *supra* note 84, at 74–80.

142. See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 222–25 (2003); William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*, 70 U. CHI. L. REV. 471, 485–88 (2003).

143. See Fennell, *supra* note 4, at 1495–501.

144. On the economies of fanwork culture, see generally Rebecca Tushnet, *Payment in Credit: Copyright Law and Subcultural Creativity*, LAW & CONTEMP. PROBS., Spring 2007, at 135.

established by the patent laws.¹⁴⁵ At the copyright–trademark interface, multiple-takers arrangements may create incentives to secure compensating protection through branding.¹⁴⁶ Yet the cure for both problems may be less control, not more. Reduced trade secret protection combined with an antitrust stance on patent pooling designed to facilitate such arrangements might counteract disincentives to disclose technical innovations. Similarly, more vigilant policing of the border between copyright and trademark could ensure that second comers enjoy the privileges of a multiple-takers arrangement in fact as well as in theory.

D. Bespoke Entitlements: Licensing as Tailoring

A final important feature of the IP landscape is the frequent use of licenses to structure relationships, creating bespoke entitlements that exist at the boundary between property and contract. IP scholars initially approached bespoke entitlements as problems of contract law, but many have come to think that contract doctrine and theory are poor tools for understanding the doctrinal and conceptual challenges that such arrangements can raise.¹⁴⁷ Licensing practices vary widely across different communities and different technical and cultural subfields. Some license restrictions seem concerned principally with creating barriers to competition; others with maintaining reputation; and others with enforcing price-discrimination schemes. Some licensing schemes, such as free software and Creative Commons licenses, express normative commitments to increased information flow. Important recent work by IP scholars, including Molly Van Houweling’s account of IP licenses as servitudes and Christopher Newman’s study of property licenses, attempts to push beyond contract and explore what property doctrine brings to the table.¹⁴⁸ As Van Houweling recognizes, however, the harms potentially produced by bespoke entitlements are somewhat different than those that motivated the early judicial hostility to land servitudes.¹⁴⁹ And Newman’s “property

145. On the place of trade secrecy within the patent hierarchy, see *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476–79 (1974); Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, 61 STAN. L. REV. 311, 329–41 (2008).

146. On the copyright–trademark overlap, see Viva R. Moffat, *Mutant Copyrights and Backdoor Patents: The Problem of Overlapping Intellectual Property Protection*, 19 BERKELEY TECH. L.J. 1473, 1505–10 (2004).

147. For a sampling of the commentary, see Niva Elkin-Koren, *Copyright Policy and the Limits of Freedom of Contract*, 12 BERKELEY TECH. L.J. 93 (1997); Mark A. Lemley, *Beyond Preemption: The Law and Policy of Intellectual Property Licensing*, 87 CALIF. L. REV. 111 (1999); Michael J. Madison, *Reconstructing the Software License*, 35 LOY. U. CHI. L.J. 275, 306–08 (2003); Maureen A. O’Rourke, *Copyright Preemption After the ProCD Case: A Market-Based Approach*, 12 BERKELEY TECH. L.J. 53 (1997).

148. See Christopher M. Newman, *A License Is Not a “Contract Not To Sue”: Disentangling Property and Contract in the Law of Copyright Licenses*, 98 IOWA L. REV. 1101 (2013); Van Houweling, *supra* note 23.

149. See Van Houweling, *supra* note 23, at 927, 949–50.

license” terminology begs important questions about what a characterization as property should require.

Viewed from the perspective of property as evolving political economy, bespoke entitlements for IP may be better understood—though not necessarily endorsed—as emergent property institutions of the sort that Merrill and Smith call “intermediate relations”—legal institutions at the boundary between property and contract with formalized (and often codified) rules that reflect attributes of both systems.¹⁵⁰ Merrill and Smith identify bailments, trusts, leasehold estates, and security interests as instances of intermediate relations in chattel and real property. That list is noteworthy for its inclusion of security interests, a type of derivative property not often discussed in articles about property theory.¹⁵¹ Derivative property instruments are intermediate relations through and through; they are creatures of contract that over time have become regularized and propertized in ways that ordinary contracts are not. Once again, however, intermediate relations also appear in other branches of the property family tree. Because of the collective action problems involved, the laws governing corporations and other fictional entities might seem an unlikely home for intermediate relations, and yet various types of “uncorporations” exist, such as public-benefit corporations with explicit social responsibility mandates.¹⁵² In IP, examples of intermediate relations include trade secrecy law, which creates duties as a function of both owners’ and competitors’ conduct,¹⁵³ and the copyright rules about joint authorship, which include quasi-contractual standards.¹⁵⁴

As Merrill and Smith show, intermediate relations cohere into patterns, and consideration of information costs helps to explain why. First and most basically, insufficient standardization can dissipate the expected gains from such arrangements by making it difficult for participants to understand the rules and value their own interests.¹⁵⁵ Second, when information costs are distributed unevenly, the rules surrounding intermediate relations can correct for the imbalance.¹⁵⁶

150. Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 809–11 (2001).

151. *See id.* at 833–43.

152. *See* Alicia E. Plerhoples, *Delaware Public Benefit Corporations 90 Days Out: Who’s Opting In?*, 14 U.C. DAVIS BUS. L.J. 247, 271–74 (2014).

153. *See* UNIF. TRADE SECRETS ACT § 1(1) (amended 1985), 14 U.L.A. 536 (2005) (defining “improper means”); *id.* § 1(4) (defining “trade secret”).

154. *See* 17 U.S.C. § 101 (2012) (defining “joint work”); *Aalmuhammed v. Lee*, 202 F.3d 1227, 1231–35 (9th Cir. 2000) (noting that factors such as intent and control are considered in determining joint authorship); *Thomson v. Larson*, 147 F.3d 195, 200–05 (2d Cir. 1998) (applying a two-pronged test to determine joint authorship, requiring: “(1) . . . independently copyrightable contributions . . . ; and (2) full[] inten[t] to be co-authors”).

155. Merrill & Smith, *supra* note 150, at 804.

156. *Id.* at 804–05.

Information cost analysis, though, does not speak to the factors that might have prompted the emergence of intermediate relations in the first place, nor does it address the normative and distributive questions that such arrangements can raise. Intermediate relations such as trusts and leaseholds are ways of redistributing risks and correlative obligations. They therefore raise questions about the kinds of risks that should be shifted, the parties who can most effectively bear increased risk, and the constraints that ought to apply. The parties benefitting from such arrangements—absentee owners, trust beneficiaries, and tenants—also can be vulnerable and may require the law’s protection. Intermediate relations crystallize settlements that reflect political and policy judgments about which issues to leave to markets and what sorts of protection the law should provide.

Here it is worth considering the servitudes analogy to IP licensing more carefully, not for its doctrinal parallelism or lack thereof, but because the law of servitudes serves a comparable purpose within the evolving political economy of property in land. The risk-shifting function of servitudes is well recognized; for example, when neighbors in a residential community accede to servitudes excluding commercial development, they often do so in the belief that such development will decrease property values. In the main, such restrictions are enforceable, but the tolerance for organized risk shifting by private property owners is not unlimited. Restrictions can be set aside when conditions change so as to make the burden on development by current owners unreasonable.¹⁵⁷ Arguably, the law of servitudes too is an emergent intermediate relation, but in many locations land-use planning is structured by comprehensive zoning schemes that have supplanted private servitude arrangements as the principal vehicle for allocating development benefits and burdens. Recent experiments in derivative property supply another timely example of the promise and peril of private risk-shifting arrangements. Collateralized debt obligations crafted atop more traditional derivative property interests were attempts to distribute risks among investors in tailored and manageable amounts, but their complexity backfired, decreasing the incentive and even the ability of investors to monitor their own investments and shifting to the public the costs of the resulting systemic risk.¹⁵⁸

Intermediate relations also are ways of expressing the normative commitments of communities who feel that the default rules of the relevant

157. See RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 7.10 (AM. LAW INST. 2000); RESTATEMENT OF PROP.: SERVITUDES § 564 (AM. LAW INST. 1944).

158. See William W. Bratton & Adam J. Levitin, *A Transactional Genealogy of Scandal: From Michael Milken to Enron to Goldman Sachs*, 86 S. CAL. L. REV. 783, 799–801 (2013); Anna Gelpern & Adam J. Levitin, *Rewriting Frankenstein Contracts: Workout Prohibitions in Residential Mortgage-Backed Securities*, 82 S. CAL. L. REV. 1075, 1084–85 (2009); Adam J. Levitin & Susan M. Wachter, *Explaining the Housing Bubble*, 100 GEO. L.J. 1177, 1238–42 (2012).

property regime assign their concerns insufficient weight. Again, the law of servitudes is instructive; landowners in common interest communities have used servitudes to order their own communities in a variety of ways that the baseline real property entitlement does not contemplate. Some normative commitments, however, conflict with fundamental public policies. The classic example is the racially restrictive covenant, which continued to serve as a vehicle for signaling exclusionary animus long after it had been stripped of legal effect.¹⁵⁹ Other long-simmering debates about permissible servitude restrictions pit community aesthetic judgments against free expression values, and sometimes against the livelihoods of community members.¹⁶⁰ In each of these examples, normative commitments expressed as property restrictions also have distributive consequences.

Turning back to IP, at minimum we can say that the move toward bespoke entitlements expresses a demand for greater institutional complexity—a sense that different industries and communities may require or prefer different forms of tailoring. And at minimum we have learned that markets will not necessarily mediate the turn toward complexity effectively; for example, consumers do not read complex form contracts and also can be nudged to accept terms that undercut their interests.¹⁶¹ Property law steps in here, but not because it represents a neutral response to information cost problems. It is still undetermined which bespoke entitlements will crystallize into intermediate relations recognized as such by law, but it is possible to identify licensing practices that have come into widespread use and to note some issues that seem to recur. Three issues in particular are worth noting, each of which relates to the effects of different institutional arrangements on resource access costs.

First, bespoke entitlements can alter the nature and distribution of spillovers. Many IP scholars have argued that standard-form end user license agreements (EULAs), now widely used within the software industry, change the balance of private rights and public privileges in ways that members of the public may not recognize or factor into the price and

159. See RICHARD R. W. BROOKS & CAROL M. ROSE, *SAVING THE NEIGHBORHOOD: RACIALLY RESTRICTIVE COVENANTS, LAW, AND SOCIAL NORMS* 18 (2013).

160. See, e.g., *Bernardo Villas Mgmt. Corp. v. Black*, 253 Cal. Rptr. 509, 509–10 (Cal. App. 1987) (holding that a homeowners association restriction prohibiting the use of condominium carports for parking trucks was unreasonable); *Md. Estates Homeowners Ass'n v. Puckett*, 936 S.W.2d 218, 219–20 (Mo. Ct. App. 1996) (upholding restrictive covenant enjoining residents from parking trucks in their driveway or on the street); *Bluffs of Wildwood Homeowners' Ass'n v. Dinkel*, 644 N.E.2d 1100, 1102–03 (Ohio Ct. App. 1994) (upholding a condominium restriction providing that no part of common areas could be used for parking trucks).

161. See generally Yannis Bakos, Florencia Marotta-Wurgler & David R. Trossen, *Does Anyone Read the Fine Print? Consumer Attention to Standard-Form Contracts*, 43 J. LEGAL STUD. 1 (2014) (discussing results of a study designed to measure whether and how long users looked at an online license agreement); Lauren E. Willis, *When Nudges Fail: Slippery Defaults*, 80 U. CHI. L. REV. 1155 (2013) (discussing the problem of abusive consumer default choices).

that are undesirable as a matter of public policy.¹⁶² If widely honored, some types of EULA restrictions, such as those prohibiting reverse engineering or restricting competition, would substantially alter the landscape of intellectual production by limiting spillovers publicly determined to be beneficial. Such restrictions are instances of risk shifting by private property owners to the general public, and it is not clear why the rules governing servitudes and property licenses, which are reactive rather than prospective, should provide the only tools for policing them. Here it is instructive to compare the standard-form EULA to one of Merrill and Smith's intermediate relations, the leasehold estate. Compared to the traditional Anglo-American leasehold estate, contemporary residential leaseholds come with a complex package of rights, obligations, and remedial entitlements. Merrill and Smith offer an information-costs explanation for many of those rules and conclude that the shift to a more contract-like model makes sense with respect to aspects of the landlord-tenant relationship that are in personam or that create multiparty information problems.¹⁶³ Others have explained the revolution in landlord-tenant law as the product of a shift toward contract duties of good faith and fair dealing that mitigated harsher property doctrines reinforcing the landowner's dominion, and toward obligations of disclosure and suitability modeled on the analogous doctrines in commercial law.¹⁶⁴ Yet some immutable rules about residential leaseholds, such as the implied warranty of habitability, reach beyond contract to advance normative and distributive policy goals.¹⁶⁵ Those rules express a broad social consensus about the living conditions that humans have a right to expect. Originally judge made, the rules were included in the Uniform Residential Landlord and Tenant Act and today have been adopted in various forms by legislatures or courts in many states.¹⁶⁶ A move to formalize the EULA as an intermediate entitlement might draw useful lessons from this history.

Second and relatedly, bespoke entitlements can alter the comparative advantage of different production modalities. Consider free and open-source software licensing. One might foresee that an attempt to contract around copyright law's default rules would generate high information costs

162. See, e.g., Elkin-Koren, *supra* note 147, at 106–13; Lemley, *supra* note 147, at 139–44; Robert P. Merges, *Intellectual Property and the Costs of Commercial Exchange: A Review Essay*, 93 MICH. L. REV. 1570, 1612–13 (1995) (reviewing PETER A. ALCES & HAROLD F. SEE, *THE COMMERCIAL LAW OF INTELLECTUAL PROPERTY* (1994)).

163. Merrill & Smith, *supra* note 150, at 825–31.

164. See Mary Ann Glendon, *The Transformation of American Landlord-Tenant Law*, 23 B.C. L. REV. 503, 504–05 (1982); Alex M. Johnson, Jr., *Correctly Interpreting Long-Term Leases Pursuant to Modern Contract Law: Toward A Theory of Relational Leases*, 74 VA. L. REV. 751, 761–67 (1988).

165. See generally Glendon, *supra* note 164, at 545–57.

166. UNIF. RESIDENTIAL LANDLORD & TENANT ACT § 2.104, 2.104 cmt. (amended 1972), 7B U.L.A. 326 (2006).

if the alternative licensing paradigm could not sustain a sufficient level of standardization. For the most part, this has not occurred. Different open-source communities have coalesced around different licenses and have managed to avoid undue fragmentation.¹⁶⁷ The interface between proprietary and open development, however, is a source of persistent difficulty. Subpart IV(B), above, noted that the heterogeneity of intellectual production may motivate rent-seeking strategies as various interests compete to shape the development of property institutions to their own advantage. Contracts and technical protections that restrict the reverse engineering of proprietary software, which work to raise competitors' costs, also can alter the costs of open-source development.¹⁶⁸ Another important issue concerns the extent to which developers of proprietary software can incorporate open-source modules. Such incorporation increases the market penetration of open-source systems but also may represent an opportunity for proprietary incursions on the open-source model of production. Multiple iterations of the licensing templates have attempted to balance these considerations,¹⁶⁹ but perhaps we should not expect contracts to do that job alone. Another way to address the problem might involve developing special-purpose rules defining the scope of the derivative work right in the software context.

Finally, bespoke entitlements can redistribute resource access costs by disrupting existing intermediation arrangements. As an example, consider the treatment of public performance rights within the music industry. For nearly a century, those wishing to engage in public performances of copyrighted musical works have participated in a system of blanket licensing administered by membership-based collective rights organizations. With the advent of digital streaming services and the enactment of a limited public performance right for sound recording copyright owners, some music publishers have become unhappy with the royalties generated through blanket licensing. A hotly debated topic is whether those publishers can selectively withdraw digital streaming rights from collective

167. The Creative Commons licensing system, which attempts to port the open-source model to the cultural context, has confronted some standardization problems. See Séverine Dusollier, *The Master's Tools v. The Master's House: Creative Commons v. Copyright*, 29 COLUM. J.L. & ARTS 271, 285–91 (2006); Niva Elkin-Koren, *What Contracts Cannot Do: The Limits of Private Ordering in Facilitating a Creative Commons*, 74 FORDHAM L. REV. 375, 420–21 (2005).

168. For discussion of the interplay between contract and technical restrictions and reverse engineering, see generally Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575 (2002).

169. See Ronald J. Mann, *Commercializing Open Source Software: Do Property Rights Still Matter?*, 20 HARV. J.L. & TECH. 1, 14–19 (2006); Nadan, *supra* note 130, at 355–60. A third and more intractable problem, which is beyond the scope of this Article, concerns the proliferation of software patents. Patented components cannot simply be reverse engineered. An open-source developer wanting to avoid royalty obligations must find a workaround that does not incorporate the patented subject matter. For discussion and an attempted resolution, see generally Gideon Parchomovsky & Michael Mattioli, *Partial Patents*, 111 COLUM. L. REV. 207 (2011).

licensing arrangements.¹⁷⁰ The court that oversees the consent decree under which ASCAP operates recently rejected an attempt to do so, ruling that the decree does not permit selective withdrawal.¹⁷¹ One might explain that result from an information-costs perspective. If selective withdrawal from blanket licensing became widespread, it could alter the distribution of information costs in the market for licensing musical performances. But resource access costs supply a more fundamental explanation of why opting out ought not to be possible. Although the ASCAP blanket licensing regime is still nominally contractual, under judicial supervision it has come to function as an intermediate relation, with rules that are not subject to à la carte variation. Bespoke entitlements for public performance licensing would frustrate beneficial intermediation in the market for digital music services, which requires a high degree of standardization to proceed.

V. Conclusion: Cathedral or Laboratory?

Property talk about IP has had a Procrustean character, but perhaps that defect is a result of the way property as a category has been conceived. Land is sufficiently different from intellectual goods that legal rules governing property in land should not be assumed to provide definitive guidance about the design of IP institutions. To the extent that real property law offers such guidance, moreover, it is important to recognize that natural resources law, corporate law, and the laws governing negotiable instruments also have important contributions to make to an account of IP's functions and purposes.

With respect to property theory generally, this exploration of IP's similarities to and differences from other kinds of property has suggested that what is needed from property theory is not a different view of the cathedral, but rather recognition that the cathedral is a relatively inapt metaphor for the diverse mix of institutions through which society orders access to and use of valuable resources. Institutionally, property is a laboratory for experimentation with the best ways of allocating, defining, and mediating ownership. There is more heterogeneity, and more possibility, within property law and practice than we have recognized.

With respect to IP in particular, the discussion in Part IV indicates some considerations that should inform the design of legal institutions. First, rather than arguing about whose incentives matter more to the production of IP, it makes more sense to acknowledge that both creators

170. See, e.g., Griffin Davis, *Conflict Over Consent Decrees*, MUSIC BUS. J., Oct. 2014, at 1; Ed Christman, *Dept. of Justice Considering Major Overhauls on Consent Decrees*, SOURCES SAY, BILLBOARD (Apr. 7, 2015, 2:29 PM) <http://www.billboard.com/articles/business/6524359/dept-of-justice-consent-decrees-overhaul-publishing-ascap-bmi> [<http://perma.cc/ZQM9-WH9B>].

171. See *In re Pandora Media, Inc.*, Nos. 12 Civ. 8035(DLC), 41 Civ. 1395(DLC), 2013 WL 5211927, at *7 (S.D.N.Y. Sept. 17, 2013), *aff'd sub nom.* *Pandora Media, Inc. v. Am. Soc. of Composers, Authors & Publishers*, 785 F.3d 73 (2d Cir. 2015).

and intermediaries (and their respective motivations) matter a great deal, and then to consider the implications of that admission. In particular, the double-incentive problem highlights the need for an incentive-independent theory to structure the initial allocation of rights between creators and first-order intermediaries and the need for meaningful rules about accountability between creators and first-order intermediaries. Second, the irreducible heterogeneity of intellectual production and consumption underscores the importance of designing entitlement regimes in ways that can accommodate complexity, facilitating all of the modes of production that are important. Third and relatedly, an important consideration in the design of legal institutions for IP is the extent to which the entitlement structure facilitates intermediation—i.e., provision of access to already-existing resources in ways that may be fractional and/or cumulative. Finally, the increasing reliance on bespoke entitlements underscores the importance of flexibility but also the need for careful evaluation of the ways that such arrangements redistribute risks and shift resource access costs. IP lawyers and policymakers should be alert to the possibility that a general, one-size-fits-all system of IP rules may no longer be the best framework for structuring certain types of common interactions and that new intermediate relations may be needed.