The Private Law Architecture of Intellectual Property

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January 9, 2026

Abstract: Intellectual property occupies an uncertain and controversial place in private law. As a largely constructed legal order with purposes in view, private law appears to many as an inapt source of analogies at best and a distorting straitjacket at worst. From these perspectives, private law is associated with rigid formalism, excessive conceptualism, and over-propertization. I argue that the problem lies in the theory of private law implicit in discussions of intellectual property law and policy. Once we recognize that private law is both more structured – and for that very reason – more flexible than as generally portrayed, private law in general and property in particular can serve the functions of intellectual property in a tailored and adaptable way. Applying the tools of complexity economics, intellectual property law can be seen as providing the benefits of modularity – to areas of law and to entitlements – and as in the rest of private law it furnishes a second-order structure of interfaces between these modules. This paper makes explicit how the interfaces between property and contract, property and tort, and tort and contract, along with those involving restitution and equity, play out in the realm of intellectual property and serve to make intellectual property responsive to its purposes without burdening enforcers, transactors, and potential violators with unnecessary information and complexity costs. The paper ends with some thoughts on the implications of this architectural view of private law for the nature of intellectual property.

Introduction

Intellectual property occupies an uncertain and controversial place in private law. For many commentators, private law in general and property in particular are associated with system, formalism, rigidity, and overprotection. Private law notions are the camel's nose in the tent, and property talk is the ultimate slippery slope.

Although this bad dynamic can seem inevitable on some mainstream approaches to private law, I will argue that a more structural and system-based – a more architectural – theory of private law can make private law and even property into sources of flexibility and a bulwark against overprotection.[1] And as in property more generally, the architecture of private law

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[1] On the architectural approach to private law, see, e.g., Henry E. Smith, Systems Theory: Emergent Private Law, in The Oxford Handbook of the New Private Law 139 (Andrew Gold et al. eds., 2020); see also Thomas W. Merrill & Henry E. Smith, The Architecture of Property, in Research Handbook on Private Law Theories 134 (Hanoch Dagan & Benjamin Zipursky eds., 2020).

enables law to attain better combinations of the benefits and costs of complexity when it comes to activities involving valued information.

The positive role private law architecture plays in intellectual property has been obscured by an impoverished picture of private law itself. I will distinguish between "flat" and "architectural" frameworks for thinking about private law.[2] On a flat view of private law, to the extent that private law is not subsumed into public law, it is a collection of discrete rules or standards that target particular problems. Likewise, legal concepts are not interconnected but shallow and directed to concrete particulars with a view to functional ends. If this flat version of law is to be seen as complex in any sense, it is because the law itself is a reflection of external complexity, trying to match piece for piece and rule by rule the social reality it regulates. If this picture is familiar, it should be: it comes to us from legal realism and forms the background assumptions of the majority of theorizing about law in the U.S., from progressive policy making to law and economics and even to many philosophies of various stripes.[3]

By contrast, on the architectural framework, legal concepts and doctrinal structures are interconnected and can be more abstract depending on their purposes. We can start with the notion of system. On flat private law theory, system is associated with arid deduction, formalism, stasis, and perhaps even deception about regressive policy choices. This is an odd way to look at system, especially in light of modern systems theory. There a system is a set of interconnected elements, and the action is in the interconnections.[4] In simple systems, there are few such elements and connections, while complex systems feature many elements densely enough connected that properties will emerge at the system level that do not hold for the elements themselves.[5] Thus, the wetness of water is not a property of molecules, and the function of a car is not the additive sum of the role of the individual parts. As these examples suggest, systems can be natural or artificial, and they can arise through evolution or by design. For many systems, their complexity could not be managed without modularity: the system is organized into components in which interactions are relatively intense within the components and relatively sparse across interfaces.[6] Again, this is important in both evolution and design. If functional

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[2] Henry E. Smith, Property beyond Flatland, 10 Brigham-Kanner Property Rts. J. 9 (2021).

[3] See, e.g., Andrew S. Gold, Internal and External Perspectives: On the New Private Law Methodology, in The Oxford Handbook of the New Private Law 3 (Andrew S. Gold et al. eds. 2021); Brian Leiter, Legal Realism, in A Companion to Philosophy of Law and Legal Theory (D.M. Patterson ed., 2d ed., 2010); Emily L. Sherwin, Formalism and Realism, in The Oxford Handbook of the New Private Law 465 (Andrew S. Gold et al. eds., 2020).

[4] See, e.g., Melanie Mitchell, Complexity: A Guided Tour (2011); Herbert A. Simon, The Sciences of the Artificial (2d ed. 1981); Stefan Thurner, Rudolf Hanel & Peter Klimek, Introduction to the Theory of Complex Systems (2018).

[5] See, e.g., Emergence: Contemporary Readings in Philosophy and Science (Mark Bedau & Paul Humphreys eds., 2008); Timothy O'Connor, Emergent Properties, The Stanford Encyclopedia of Philosophy, Edward N. Zalta ed., 2020), https://plato.stanford.edu/archives/win2021/entries/properties-emergent/; P.W. Anderson, More is Different: Broken Symmetry and the Nature of the Hierarchical Structure of Science, 177 Science 393, 393, 395 (1972).

[6] Carliss Y. Baldwin & Kim B. Clark, Design Rules: Vol. 1, The Power of Modularity 58-59, 236-37, 257 (2000); Simon, supra note 4; Richard N. Langlois, Modularity in Technology and Organization, 49 J. Econ. Behav. 19 (2002).

systems like bird's wings were intensively connected to every other aspect of a bird, small changes to a wing would have ripple effects that might make incremental improvements impossible. In a car, reengineering the brakes will not require thinking much about the windshield wipers.

This paper will show how this more architectural framework for private law not only defuses some of the arguments for downplaying private law and property in intellectual property. More importantly, it will draw out how such an approach to private law and property can and should provide a flexible and functionally justified system for intellectual property law. In particular, I will show that higher-order principles that govern the interfaces between areas of private law – most prominently but not exclusively that between property and contract – also undergird intellectual property. At the same time, intellectual property is special in dealing with largely nonrival resources and activities that often require multiple actors to have access. For these reasons, the modular structures and interface principles that are difficult enough to bring out in the traditional areas of private law present a special challenge in the case of intellectual property. For intellectual resources, instead of simple analogies we need to think about how the structure of intellectual property works from the micro level of individual actors encountering, transacting over, and enforcing intellectual property rights to the macro level of the benefits and costs that emerge through the set of such interactive activities taken as a whole.

This paper begins in Part 1 by distinguishing notions of system and showing that system in the sense of modern systems theory proves to be better both descriptively and normatively in capturing private law than older conceptions (or misconceptions) of "system," "formalism," and "conceptualism." Without compromising private law's ability to serve its purposes, higher-order structures – from the law of offer and acceptance in contract to notions of privity, standardization, and the like – private law shows a high degree of invariance. This second-order robustness could have a variety of sources that transcend social convention in various ways ranging from natural law to human psychology to social emergence. Part 2 then shows how the architecture of private law in the area of intellectual property law functions as a system. Most importantly, in contrast to the conventional picture, the private law and property aspects of intellectual property lend it a heterogeneous and flexible character and allow for different parts of intellectual property law to specialize and adapt over time. In particular, when intellectual property draws on private law, it makes use of the modules provided by contract, property, tort, and equity. It does not simply mix private law elements in a totally unconstrained fashion. Instead, intellectual property shows a modular private law structure: it combines contract, property, tort, and equity only in certain stylized ways, through defined interfaces. Part 3 concludes with some thoughts on the implications of private law architecture for the design of intellectual property.

1. System and Its Discontents in Intellectual Property

Before we can consider how private law can and should contribute to intellectual property, we need to have a clear picture about private law itself. We will address this question by considering various notions of system (or anti-system) in private law and what their consequences are for intellectual property.

The bad reputation of private law and of private law baselines in intellectual property is an unfortunate, if understandable, outgrowth of legal realism. In realism and the mainstream currents that derive from it, private law is public law in disguise, an alternative if somewhat cumbersome and history-encrusted way of dealing with social problems.[7] Moreover, on this view, such problems are more complex than in the formative era of private law and have outgrown such artisanal and horse-and-buggy techniques. Realism means many things, but it typically favors concepts that are closely tied to particulars and are easy to reconfigure when it is felt necessary.[8] Characteristic of this approach is the bundle-of-rights picture of property, which until recently was the unquestioned tenet of all legal cognoscenti.[9] The bundle of rights can be taken many ways, some more useful than others, but the metaphor itself invites us to think about property as separable sticks.[10] This ties the concepts closely to very concrete uses we care about and suppresses the interconnections between them: the sticks have an additive effect and so optimizing one stick in the bundle is to optimize the whole.

At first blush, this entire approach seems made to order for intellectual property. Since at least the legal realist era, system in private law has been seen as making the law excessively formalist and rigid, thereby producing inaccurate and undesirable results.[11] This suspicion is directed especially at property with its emphasis on things and (at times) formalities, ranging from the right to exclude implemented in trespass law to a relatively formalistic construction of deeds to the technicalities of the estate system.[12] When property is offered as a source of doctrines or even analogies in the area of intellectual property law, this critique seems to apply

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[7] See, e.g., Leon Green, Tort Law Public Law in Disguise, 38 Texas L. Rev. 1 (1959).

[8] Henry E. Smith, On the Economy of Concepts in Property, 160 U. Pa. L. Rev. 2097 (2012).

[9] See, e.g., Thomas W. Merrill & Henry E. Smith, What Happened to Property in Law and Economics?, 111 Yale L.J. 357, 398 (2002); J.E. Penner, The "Bundle of Rights" Picture of Property, 43 UCLA L. Rev. 711 (1996); Henry E. Smith, Property as the Law of Things, 125 Harv. L. Rev. 1691 (2012). See generally Symposium—Property: A Bundle of Rights?, 8(3) Econ J. Watch (Sept 2011), https://econjwatch.org/issues/volume-8-issue-3-september-2011?ref=issue-archive.

[10] Thomas Ross, Metaphor and Paradox, 23 Ga. L. Rev. 1053, 1061-62 (1989). See also, e.g., Thomas C. Grey, The Disintegration of Property, in NOMOS XXII: Property 69 (J. Roland Pennock & John W. Chapman eds., 1980); Walton H. Hamilton & Irene Till, Property, in 11 Encyclopaedia of the Social Sciences 528 (Edwin R.A. Seligman & Alvin Johnson eds. 1937).; Carol M. Rose, Property and Persuasion: Essays on the History, Theory, and Rhetoric of Ownership 280 (1994) (arguing that the bundle-of-sticks metaphor implies that rights making up ownership are separable and "all more or less alike" and that seeing ownership rights as more like "[t]oys in a toy chest" would be truer to how they are "interconnected and interdependent," perhaps in the service of "some larger general purpose"); Jane B. Baron, The Contested Commitments of Property, 61 Hastings L.J. 917, 967 (2010) ("In the sense of being an agglomeration of separable powers, property can be said to be a 'bundle of rights.'").

[11] The Realists took a range of positions on conceptualism, but a common thread was the need to keep concepts narrow and close to the facts, coupled with a suspicion of deduction form more abstract propositions about law. For a classic diatribe against conceptualism, see Felix S. Cohen, Transcendental Nonsense and the Functional Approach, 35 Colum. L. Rev. 809, 815 (1935). Even a more moderate anti-conceptualist like Karl Llewellyn compared abstract legal verbalisms unfavorably with reliance on concrete empirical facts. Karl N. Llewellyn, A Realistic Jurisprudence—The Next Step, 30 Colum. L. Rev. 431, 438-51 (1930).

[12] Many of Cohen's examples were drawn from property. See also Grey, supra note 10.

with special force. By contrast, a disaggregated bundle of rights allows us to tailor protection to the subject matter and the ways of dealing with it that truly deserve protection. Broad rights to exclude from things seem especially inapt when it comes to nonrival informational resources.

And there is indeed reason to tread cautiously when it comes to the relation of private law to intellectual property. The fear is that a "property syllogism" will start with defining information as a resource or a thing with value and from there deducing that it should be protected as property, finally leading to broad and hard-to-change rights that prevent the free use of information and fail to correspond to any sensible policy regarding information.[13]

This slide into overprotection is not inevitable once we take a different approach to system. In this paper, I will adopt the notion of system in complex systems theory.[14] A system is any connected set of elements. Complexity comes in degrees. At one extreme is simplicity, in which few elements interact in few ways, which allows direct analysis. At the opposite extreme is full complexity or even chaos, where enough elements are so densely interconnected that system behavior is unpredictable from knowledge of the micro workings of the system. (In chaos, a small local change can ultimately result in a major effect at the system level, with butterflies and hurricanes being the stock example.) In between and most relevant for legal conceptualism is organized complexity, in which elements are connected but not totally, and the pattern of connections may fall into clusters, which we can treat as semi-separate, i.e. modules.[15] Here macro properties of the whole are nontrivially connected to the micro level – they are emergent – but in a somewhat predictable way. As mentioned earlier, many natural and artificial systems work this way, including anatomical structures among the former and cars, computers, and software among the latter.

Once we adopt such a notion of system for private law, many of the criticisms of private law and property as doctrinal sources for intellectual property are turned on their heads.[16] If law is a complex system, it can be more or less open to the outside. There is no reason that legal concepts must be autonomous and highly formal. Instead, we should expect that they will differ depending on their function. Thus, the concept of possession is highly connected to social practice, while the right to possess is more abstract and connects parts of the law more internally. In addition to this kind of specialization of concepts, entire areas of doctrine can specialize, thereby contributing to a whole greater than the sum of its pats. Trespass can be relatively simple and can (not must) contribute to a fair or efficient system of property law, even if exercises of trespass law might look anything but fair or efficient, and maybe even greedy and shortsighted. Likewise, regular law (e.g. "common law" in the narrow sense) can be more formal and guide

[13] See Wendy J. Gordon, On Owning Information: Intellectual Property and the Restitutionary Impulse, 78 Va. L. Rev. 149 (1992); Jessica Litman, Information Privacy/Information Property, 52 Stan. L. Rev. 1283 (2000).

[14] See the sources cited in notes 4 and 5 supra.

[15] Warren Weaver, Science and Complexity, 36 American Scientist, 536 (1948).

[16] See Smith, supra note 1.

behavior differently and arguably better when equity as meta-law is a separate module that can be stronger and more targeted in its pursuit of fairness and morality.[17]

Although something similar true for intellectual property, intellectual property features modular systems that are suited to nonrival resources – in a fashion importantly different from that in the rest of private law. As we will see, the architectural principles are similar across areas of private law, but the exact combinations are indeed tailored for intellectual property in general, and different areas of intellectual property in particular. To return to the common suspicions of private law, the thought is that property means exclusion means overprotection. Instead, we do see an architecture of exclusion strategies based on rough proxies not tied directly to use, working in tandem with governance strategies that regulate use more directly.[18] Thus, regular property shows this architecture most prominently in trespass (largely exclusion) and nuisance (a combination of exclusion and governance). In intellectual property, we have exclusion and governance, but in different proportions. Because uses are difficult to exclude and multiple nonrival uses are often valuable, we see relatively greater reliance on governance than on exclusion in intellectual property. Elsewhere, I have argued that certain resources are fluid including actual fluids like water but also radio spectrum and information.[19] There we see property rights defined relatively more in terms of governance than exclusion.

Further, even within intellectual property, the kind of system from complex systems theory allows for different levels and kinds of exclusion. Patent law is more reliant on defining a thing (invention) and exclusion strategies, whereas copyright comes close to a list of use-rights (with defining an expression as a thing being very difficult and not driving results as much as specifying activities like copying, performing, and the like).[20] As with the delineation strategies of exclusion and governance in general, the relative emphasis on the one or the other is functionally motivated.[21] Patent law deals with hard-to-foresee, interlocking uses, and with interactions involving many and transaction-rich inputs to commercialization. In the case of copyright, benefits and costs of delineating rights point towards focusing on activities.

From a slightly different vantage point, we can ask whether law or any part of it is a spontaneous or made (designed) order.[22] As with private law baselines, this question is

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[17] Henry E. Smith, Equity as Meta-Law, 130 Yale L.J. 1050 (2021).

[18] Henry E. Smith, Governing Intellectual Property, in Research Handbook on the Economics of Intellectual Property Law: Volume 1: Theory 47 (Ben Depoorter, Peter Menell & David Schwartz eds., 2019).

[19] Henry E. Smith, Semicommons in Fluid Resources, 20 Marq. Intell. Prop. L. Rev. 195 (2016).

[20] Molly Shaffer Van Houweling, The New Private Law and Intellectual Property: Calibrating Copyright on the Common Law Continuum, in The Oxford handbook of the New Private Law 409 (Andrew Gold, et al., eds., 2020); Henry E. Smith, Intellectual Property as Property: Delineating Entitlements in Information, 116 Yale L.J. 1742, 1799-1819 (2007).

[21] Henry E. Smith, Exclusion Versus Governance: Two Strategies for Delineating Property Rights, 31 J. Legal Stud. S453 (2002); Smith, supra note 2.

[22] F.A. Hayek, Kinds of Order in Society, 3 New Individualist Rev. 457 (1964).

sometimes treated as more ideologically fraught than it needs to be. To say that private law is a spontaneous order is to characterize where it comes from and how it evolves. Thus, in property we might see customs and later laws, especially of possession, as arising out of the way people solve bilateral and very local conflicts over resources.[23] Similarly with how we should treat each other (one on one) in torts and what bilateral agreements require of us in contract law. This bilaterality features very prominently in some theories of private law, but regardless of whether it is part of the normative fabric of all private law and requires an integrated account, private law does feature a heavy element of one-on-one formulation as a starting point, which may reflect its development.[24] And the kinds of morality from which private law draws strength are also local in this sense.[25] Other aspects of private law seem more designed, and courts when formulating holdings and new rules do sometimes create something new.[26] This is even truer of legislation, which reflects a wider range of policy concerns. And where private law is codified, the interplay of made and designed orders is especially complex, but the design element is hard to deny.

Intellectual property is more of a made or designed order than most other areas of private law. Also, in some systems like that in the United States, its justifications are most often framed in consequentialist or even utilitarian terms. The U.S. Constitution speaks of "promot[ing] the Progress of Science and useful Arts."[27] Sometimes the mechanisms familiar from private law – property-style entitlements and tort-like liability – are employed in intellectual property to promote consciously chosen ends. I return to the question of design in Part 3.

We will be able to ask questions about design after seeing what the structure actually is and can be. The main focus here will be on a subtle but very characteristic aspect of private law structure, its modularity and more specifically the interface conditions holding between modules. The modules in question will be the familiar areas of private law – property, contract, and torts – with side glances to restitution and equity.

Modularity exhibits static and dynamic aspects. For any given time, we can ask whether the pattern of interactions in a system clusters into communities, and many algorithms have been developed for detecting community structure and measuring the degree of modularity.[28]

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[23] David Friedman, A Positive Account of Property Rights, 11 Soc. Phil. & Pol'y 1 (1994); see also David Hume, A Treatise of Human Nature (David Fate Norton and Mary J Norton eds, Oxford University Press 2000) 3.2.2.9.

[24] See, John C.P. Goldberg & Benjamin C. Zipursky, Recognizing Wrongs (2020); Ernest J. Weinrib, The Idea of Private Law (1995); cf. Friedman supra, note 23.

[25] Henry E. Smith, Modularity and Morality in the Law of Torts, 4 J. Tort L., Issue 2, Article 5 (2011), http://www.bepress.com/jtl/vol4/iss2/art5; Andrew S. Gold & Henry E. Smith, Sizing Up Private Law, 70 U. Toronto L.J. 489 (2020).

[26] See, e.g., Zechariah Chafee, Jr., Do Judges Make or Discover Law?, 91 Proc. Am. Phil. Soc'y 405 (1947); Matthew X. Etchemendy, Legal Realism and Legal Reality, 88 Tenn. L. Rev. 399 (2021).

[27] U.S. CONST. ART. I, § 8 cl. 8 ("[The Congress shall have Power . . .] To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.").

[28] See, e.g., Mark Newman, Networks (2d ed. 2018).

Modularity can range from zero, with no structure, to one, with no interactions across interfaces. Most such algorithms are based on the number of the actual paths between nodes versus those expected on a random set of connections.

As for the dynamic aspect, modular systems evolve more easily though a certain range, because the relative paucity of connections across interfaces between modules means that change can happen within a module without major ripple effects. Modules can even be swapped out without massively impairing the functioning of the system.[29] For this kind of evolution to work, the interface conditions need to be respected. If those were constantly up for grabs, some improvements would occur at the cost of foregoing the benefits of modularity. Destabilizing ripple effects and all the costs of complexity that modularity manages would come back to the fore.

Interfaces, like many higher-order structures, in private law tend to be more stable and less subject to contractual variation by parties. Start with powers, which are inherently second-order. On the classic Hohfeldian definition, a power is a legal relation in which someone can change the legal relation availing between parties.[30] Thus transferring a right is the exercise of a power, as is creating an easement. Because a power is a legal relation that operates on a legal relation, it is second-order. As such, it is a little like rewiring the system of legal relations, and its operations tend to have more far-reaching ripple effects than the exercise of primary legal relations (rights and privileges). At the same time, being able to alter powers themselves is likely not to be as necessary for achieving the purposes of actors than operating at the primary level and using powers as they come (rather than altering the power itself). In a sense, reworking powers would be a kind of meta-meta-law.

For another concrete example, consider the limited ability to create powers in the law of offer and acceptance in contract. The power to offer creates a power of acceptance in the offeree. The exercise of that power results in the primary rights and duties. When we speak of freedom of contract and its benefits, that freedom and those benefits are largely captured at these two levels. Now consider what it would mean to allow people to alter the law of offer and acceptance itself. This would be a third level where actors would exercise a power to change the nature of (second-level) powers. There are few if any legitimate contractual goals that would be served by such a third-level freedom. At the same time, predicting the effects of exercising of such meta-powers would potentially cause massive information and complexity costs. Note that there are indeed actors who might beneficially exercise the power to engineer powers: namely, courts and especially legislatures.

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[29] See, e.g., Baldwin & Clark, supra note 6; Diogo Melo et al., Modularity: Genes, Development, and Evolution, 47 Annu. Rev. Ecol. Evol. Syst. 463 (2016); see also Bernardo Mueller, The Coevolution of Everything, Everywhere, All at Once: Institutions, Culture, and the Great Enrichment, in Handbook on Institutions and Complexity 126 (Eric Alston, Lee Alston, & Bernardo Mueller eds., 2025).

[30] Wesley Newcomb Hohfeld, Some Fundamental Legal Conceptions as Applied in Judicial Reasoning, 23 Yale L.J. 16 (1913), reprinted in Wesley Newcomb Hohfeld, Fundamental Legal Conceptions as Applied in Judicial Reasoning and Other Legal Essays 23-64 (Walter Wheeler Cook, ed. 1923).

In a sense, the need to keep interfaces and other higher-order aspects of private law more invariant than legal relations at the primary level is in the spirit of the *numerus clausus* in property.[31] Because property rights are in rem, even allowing for a power to create them causes externalities that need to be counteracted by standardization. By contrast, contract rights do not have these ripple effects, and so powers to create and modify them are allowed. However, if contract rights worked differently, for example if parties could create liabilities in third parties, then their implications would be more like property. The principle of no binding without privity achieves this concentration of benefits and containment of costs, and it is itself a second-order structure that manages complexity. While the privity principle may need to allow for exceptions and those exceptions may make privity sound fussy and unnecessary, the basic idea of privity is very much alive.[32] Doing away with it altogether would purchase little benefit at great cost.

2. The Private Law Architecture of the Intellectual Property System

Intellectual property sits at the confluence of property, tort, and contract, as well as restitution, and it raises questions of law versus equity. The distinctions among these doctrinal areas have often been downplayed since legal realism. It is thought that inherited categories are too simple to capture new technological and social reality. However, this misses an important part of the picture.

In this Part, I will show that relatively stable and standardized interface conditions cause the modules of private law to interact in important but limited ways, thereby both attaining flexibility and containing information costs. The focus will be on a particular kind of higher-level structure: the private law interfaces within intellectual property. For each interface, the stability and standardization that characterize the constrained interaction between the modules of private law – property, contract, tort – can be seen as a kind of ontology of private law for intellectual property.[33]

2.1 Property/Contract

A central interface for intellectual property, as in private law generally, is that between property and contract. Many institutions, including bailments, leases, security interests, and trusts, combine elements of property and contract.[34] In those areas, we sometimes see relatively

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[31] See, e.g., Ben McFarlane & Andreas Televantos, Third Party Effects, in Private Law: Form and Function. Paul B. Miller and John Oberdiek eds. Oxford Studies in Private law Theory: Volume 1. (2020); Thomas W. Merrill & Henry E. Smith, Optimal Standardization in the Law of Property: The *Numerus Clausus* Principle, 110 Yale L.J. 1, 55 (2000); Carol M. Rose, What Government Can Do for Property (and Vice Versa), in The Fundamental Interrelationships Between Government and Property 209, 214-15 (Nicholas Mercuro & Warren J. Samuels eds., 1999).

[32] See Mark P. Gergen, Privity, in The Oxford Handbook of the New Private Law 481 (Andrew S. Gold et al. eds., 2020).

[33] Simon Deakin, Juridical Ontology: The Evolution of Legal Form, 40 Historical Social Research 170 (2015).

[34] Thomas W. Merrill & Henry E. Smith, The Property/Contract Interface, 101 Colum. L. Rev. 773 (2001); Henry E. Smith, Combining Property and Contract, in The Property/Contract Interface (James Penner et al. eds., forthcoming).

strict separation of the property and contract elements as in bailment, or a more integrated institution that still keeps the strands of property and contract separate, as in leases.

Property and contract often come together because of the distinct but complementary purposes they serve. Very roughly speaking, contract law facilitates parties' objectives and allows them to pursue projects with identified others.[35] Property law serves many purposes, from protecting autonomy, rewarding investment, providing a stable platform for contracting to resolving conflicts over resources, and more.[36] In achieving these purposes and any that have a more public aspect, property law impacts a wide variety of third parties. Property law in many ways concentrates benefits and costs from activities with respect to things on the holders of rights, through a kind of matching principle implicit in ownership.[37] If property law did not provide a set platform but rather allowed it to be freely tailored by parties or even by courts, the effects on third parties could be extreme. Among other things, property binds third parties without their consent, and an unconstrained set of property rights would cause third parties to endure the effects of such rights, incur information costs to avoid them, and possibly abstain from some activities altogether.[38] This concern about the impacts on third parties is related to the "information cost" rationale for the *numerus clausus*, the principle that the kinds of property rights form a specified closed list that is largely for the legislature to revise.[39] In a sense, preventing property from being tailored by parties is an extreme form of the privity requirement, one that keeps property in its proper place.

In some situations, benefit is to be derived by serving both sets of purposes – of contract and property – furthering the ends of parties and structuring the benefits from activities with respect to things. But how contract and property combine matters greatly. One could imagine contract and property mixed in a homogenous soup serving all these purposes in whatever proportions and configurations provide benefit. This could lead to massive information costs on nonconsenting parties. To avoid this, the law provides a defined interface between contract and property that permits them to interact, but only in stylized ways, thereby preventing information and complexity costs from getting out of control.[40]

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[35] See, e.g., Patrick Atiyah, The Modern Role of Contract Law, in Essays on Contract 1 (1990); Alan Schwartz & Daniel Markovits, Function and Form in Contract Law, in The Oxford Handbook of the New Private Law 243 (Andrew S. Gold et al. eds., 2020); see also Stephen A. Smith, Contract Theory (2004).

[36] See, e.g., Gregory S. Alexander & Eduardo M. Peñalver, An Introduction to Property Theory (2012); J.W. Harris, Property and Justice (1996); Thomas W. Merrill & Henry E. Smith, The Oxford Introductions to U.S. Law: Property 11-16 (2010).

[37] Economists speak of internalization. For the locus classicus, see Harold Demsetz, Toward a Theory of Property Rights, 57 Am. Econ. Rev. 347 (1967); see also Carl J. Dahlman, The Problem of Externality, 22 J.L. & Econ. 141 (1979); Richard R.W. Brooks, Toward a Legal Analysis of Externalities, in The Property/Contract Interface (James Penner et al. eds., forthcoming).

[38] Merrill & Smith, supra note 31.

[39] Id.; see also Henry E. Smith, Standardization in Property Law, in Research Handbook on the Economics of Property Law 148, 165-67 (Kenneth Ayotte & Henry E. Smith, eds. 2011).

[40] Smith, supra note 24.

This issue of how to combine property and contract is pervasive throughout intellectual property law. The structure of the problem – the need for an interface that allows for achievement of benefits and containment of costs – is similar in intellectual property to that in private law. What is different is that the purposes to be served center around nonrival resources that admit of multiple use on the benefit side and on the cost side an increased burden processing information and dealing with complexity. With intangible resources, physical embodiment does less to "build in" constraints on the structures of rights. Instead, they must be artificially constructed in light of the aforementioned social interactions surrounding intellectual resources.

Contracting over intellectual property can result in outright transfers of rights ownership, but it is licensing that is at the heart of transactional intellectual property practice. The very notion of license is notoriously hard to pin down in property law, and it has special features in intellectual property. To begin with, it is important to distinguish licenses and the various ways licensing can come about (including but not limited to contract).

In real property, licensing is mostly a matter of real property and trespass law, but it is worth considering first personal property. Although one could say that permission to use personal property results in a license, most uses of personal property (at least those that result in litigation) require possession. Thus, licensing of personal property is usually folded into bailment, which is at bottom the rightful possession of a thing by someone other than its owner.[41] In the common law, such a possessory relationship can but need not be created by contract. Lending your car to a friend involves no contract. But where people use contracts to create bailments, the two come together across a simple interface and produce a more complex overall effect.[42] Some aspects of bailment still derive from the possessory nature of the relationship, including liability for exceeding the scope of the bailment, which sounds in conversion. If you lend me your car for a trip to the store and I drive it all over town, I can be liable in conversion, not just breach of a contract which we might not even have.

It is more common to speak of licenses in real property, typically when it comes to trespass liability.[43] Here we see more clearly that a license is a Hohfeldian privilege that permits its recipient to do what otherwise would be a rights violation. Dinner guests are licensees, as well as those who have a kind of possession by license, like hotel guests. Licenses are often confused with contracts, but they are distinct. The dinner guest has no contract, and a simple "come in" addressed to someone seeking entrance is not a contract either. By contrast, hotel guests are licensees with a contract. Although one can have a license in intellectual property without a contract (permission to put on a play without charge), much if not most of licensing in

[41] Restatement of the Law Fourth, Property, Vol. 3, Div. III (Am. L. Inst., Tent. Draft No. 3, 2022); Christopher M. Newman, Bailment and the Property/Contract Interface (September 2, 2015). George Mason Legal Studies Research Paper No. LS 15-12, Available at SSRN: https://ssrn.com/abstract=2654988.

[42] Smith, supra note 34.

[43] Restatement of the Law Fourth, Property, Vol. 2, Div. I, § 1.6 (Am. L. Inst., Tent. Draft No. 2, 2021) (Privileged Entries onto Land: Permission (Consent)).

intellectual property is by contract, and the content of the license – the scope of the permission – derives from the contracting process.

In real property, licenses may sometimes be contracted for, as in the hotel example or Airbnb. Ticket holders to movies and horse races and the like are also licensees by contract.[44] Amazingly for such a ubiquitous transaction, the conceptual questions around contracting for a license are quite confused and have been for a long time. If someone pays for a ticket, one has permission to enter the venue and one has a contractual right to be there. What if the owner of the establishment revokes the license? This is a breach of contract and would normally lead to damages. Is that all there is to it? Or does the contract disable the owner from revoking the license or re-invoking the law of trespass? If so, how does this happen? There is a power to contract, but strictly speaking one has bound oneself contractually. Whether one has the power to make the withdrawal of permission void – a nullity as opposed to a mere breach of contract – is another matter. Put more generally, when one holds a power and contracts over its exercise, does the contract operate on the power directly or is there simply a promise to exercise the power in a certain way? It would seem to be the latter, namely that ejecting a ticket holder unjustifiably is a breach of contract. If so, can the ticket holder refuse to leave? Would that be trespass? Can the owner have the objecting ticket holder removed and would that be an assault? Does it matter whether the contract would be specifically enforceable if a lawsuit were brought, especially because one cannot in other contexts act on the assumption of the availability of an equitable remedy?[45] Although there is more confusion than one would expect in this area of law, it would appear that courts do fairly consistently keep license and contract distinct, such that revoking a license can be effective and at the same time a breach of contract.[46] In other words, the contract and license are kept distinct at the interface with property.

Some of these problems carry over into intellectual property law, but with variations. To begin with, an intellectual property license is not a contract, but it can be created by contract. As in bailments and (probably) in the law of licenses in tangible property, the contract and intellectual property elements are separate and contribute to a joint effect. On the licensor side, breach of the contract is one thing, but the power to revoke is unaffected. On the licensee side, exceeding the scope of the license could be thought of as a breach of contract. Thus, if someone has a license to reproduce a work in one location but does so in another location not covered by the license, this is a breach of contract, namely the promise to stay within the bounds of the permission. However, in doing things outside the scope of the contracted-for license, the licensee is infringing on the intellectual property rights, which again are distinct from the contract.[47]

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[44] For the U.S., see, e.g., Marrone v. Washington Jockey Club of the District of Columbia, 227 U.S. 633 (1913). This approach once held in English law, but has been restricted. Compare Wood v. Leadbitter, 153 Eng. Rep. 351 (Exch. Pl. 1845) with Hurst v. Picture Theatres, Ltd., [1915] 1 K.B. 1 (C.A. 1914).

[45] Justice Holmes appears to have invoked this idea in his opinion in Marrone v. Washington Jockey Club of the District of Columbia, 227 U.S. 633 (1913).

[46] Restatement of the Law Fourth, Property, Vol. 6, Div. III (Licenses) (Am. L. Rev. Prelim. Draft 2025).

[47] See Poorna Mysoor, When the Infringer Is a Contractual Licensee, 43 Eur. Intell. Prop. Rev. 7 (2021); see also Jacques de Werra, Contract Law and Intellectual Property Transactions: Research Perspectives, in Handbook on Intellectual Property Research 67, 72-75 (Irene Calboli & Maria Lillà Montagnani 2021).

To this picture we can add some features specific to intellectual property. First, unlike with tangible property, in intellectual property, an exclusive license is treated as more robust: it is more like an in rem right and under one view it is irrevocable as a default matter, possibly meaning that the licensor lacks the power to revoke.[48] If so, an exclusive license is therefore a misnomer: it is more like an easement or a lease, not a mere permission. Second, if anything, there is more of a tendency than in regular property to conflate contracts and licenses. This matters, because conflating contracts and licenses makes some licenses perhaps more robust than they were intended to be (although this is an empirical question). In any event, the conflation makes it difficult for those who want to create a less robust structure, where a breaching licensor would be liable for only contract damages.

On the licensee side, interesting issues about the IP-contract interface have come to the fore recently. Again, it is usually thought that if the holder of an intellectual property right licenses someone and that person exceeds the scope of the license, the liability is based on the intellectual property right that is violated (there being no protection from the license). Thus, someone who exceeds the scope of a copyright license is liable for infringing the copyright. This liability is usually more stringent than would be liability for breach of contract (for example, the availability of statutory damages). This makes the interface simple like that in bailment or licenses in real property. However, an emphasis on contract can lead to different results. One might think that once the licensor and licensee are in a contractual relationship any breakdown in their relationship should be governed by the contract and contractual remedies should apply. To take a recent example, in *Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith*,[49] liability turned on Andy Warhol's exceeding the scope of the license to use Lynn Goldsmith's photograph of the singer Prince (there being, however, some factual dispute as to what the scope of that license actually was). Most of the case turned on fair use, which can be thought of as an off-the-rack mandatory license – at least it is a defense to liability.[50] A somewhat different view of the case would be to say that Goldsmith and Warhol had a contract and exceeding its terms was a breach which should be governed by contract.[51] This is a different property-contract interface and one that would require a lot of fleshing out. The penumbra of displacement by contract would need to be defined: what are the boundaries of the transaction? Moreover, the contract is one over intellectual property rights and the alternative to no contract is intellectual property enforcement. So, at some point the contract would still give out and intellectual property with its liability regime would reassert itself.[52]

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[48] Section 204 of the Copyright act imposes formalities on "'transfer[s] of copyright ownership'" which include "exclusive license[s]". 17 U.S.C. § 204. It is not entirely clear that this means that an exclusive license is disabling. For discussion and argument contra, 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, 1139-40 (2013).

[49] 598 U.S. 508 (2023).

[50] Van Houweling, supra note 20.

[51] Richard A. Epstein, Sequential Uses of Copyrighted Materials: Transforming Transformative Use Doctrine in *Andy Warhol Foundation v. Goldsmith*, 2022 Mich. St. L. Rev. 1041 (2023).

[52] For an analysis of English law, which is similar to that in the U.S., and a comparison to French law, see Mysoor, supra note 47.

There is a larger issue with intellectual property and its intersection with property. Aided in part by new technology, the possibilities for creating what amount to synthetic property rights have proliferated. By and large, the courts have so far been rather accommodating of such efforts. In the landmark case of *ProCD, Inc. vs. Zeidenberg*,[53] Judge Easterbrook found the "shrink-wrap" license to the phone number data base and associated software not to be preempted by the Copyright Act for the simple reason that a contract right is in personam and copyright is in rem. Besides assuming for the purposes of the opinion that licenses were contracts (already problematic), this approach to preemption makes sense on one level but raises problems of a deeper nature. As a general matter, a truly bilateral in personam contract does concentrate its benefits and costs on the parties in a way that should not conflict in any way with the Copyright Act, even if it does restrict one party's use of information. However, we can see how contracting can move in a de facto if not de jure direction towards in rem-ness more like that in property law. For one thing, shrinkwrap licenses are boilerplate meant to be standardized terms for a large number of consumers. As such, the set of duty holders is intermediate: it is like in personam in availing between defined parties, but the parties are like in rem in being numerous.[54] (Merrill and I dubbed such intermediate situations as "compound-paucital," as opposed to rights that have indefinite but few duty bearers, which we called "quasi-multital.").[55] Typical responses to compound-paucital situations are notice requirements and some degree of standardization.

More subtly, contracting can also reengineer what the legal thing is that is subject to property rights. Many items of personal property now incorporate software. Without the software in operation, the item will not work at all. The "seller" or licensor can stop the software from operating, and the mechanism for doing so can be some combination of technology and invocation of intellectual property rights. The archetypal smart coffee maker will do nothing ("bricking"). This can defeat ordinary people's expectations of what a thing is.[56] It also flies in the face of the traditional disfavor of servitudes on personal property.[57] The ability to accomplish this degree of control may not be only a problem of notice. If the restrictions are allowed to be as conditional as one likes, the whole notion of a thing has little content. If any attributes of a resources can be packaged into a thing no matter how unrelated and any collection of legal relations can similarly be grouped together as a unit, we have the bundle of rights in the extreme, with all the information costs and complexity that entails.[58] When it comes to nonlegal contexts,

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[53] 86 F.3d 1447 (7th Cir. 1996).

[54] See Henry E. Smith, Modularity in Contracts: Boilerplate and Information Flow, 104 Mich. L. Rev. 1175 (2006).

[55] Merrill & Smith, supra note 34.

[56] Danielle D'Onfro, Contract-Wrapped Property, 137 Harv. L. Rev. 1061 (2024); Molly Shaffer Van Houweling, The New Servitudes, 96 Geo. L.J. 885 (2008); Christina Mulligan, Personal Property Servitudes on the Internet of Things, 50 Ga. L. Rev. 1121 (2016); but see Daniel M. Klerman & Stefan Bechtold, Personal Property Servitudes Revisited, 99 Tulane L. Rev. 345 (2024).

[57] See Zechariah Chafee, Jr., Equitable Servitudes on Chattels, 41 Harv. L. Rev. 945, 977-980 (1928); see also Merrill & Smith, supra note 31, at 18-19.

[58] Christina Mulligan, Licenses and the Property/Contract Interface, 93 Ind. L.J. 1073 (2018).

the question of standardization is rarely all or nothing, and simple notice is usually not a complete answer.[59] From nutrition information to cockpit language to standard sizes, there is a role for central direction of at least a mild sort.[60] A higher-order principle maintains the basic ontology – here what can count as a legal thing.

Another set of third parties potentially impacted by intellectual property licenses are creditors in bankruptcy. If licenses are given property treatment in the sense of persistence and the effective priority that property rights get in bankruptcy in contrast to contracts, the servitudes relating to intellectual property and indirectly to any related personal property can impact nonadjusting creditors, for a true externality. For example, a contract over a machine would bind only the parties, and in bankruptcy the machine could be sold free of the contract (which also could be set aside).[61] By contrast, with property treatment as a servitude, it would bind the new owner of the machine. This might or might not be thought useful depending on the relatedness of the contract to the use of the machine and the ability to give notice to purchasers. Even so, any rights derogate from nonadjusting creditors, like trade creditors or tort claimants. This becomes a much worse problem if the contact and the item need not have a close connection. In real property, servitudes are required to "touch and concern" the land.[62] Giving a precise definition of touch and concern has proven difficult, but the doctrine precludes extraneous contracts from being promoted to property status simply by being attached to land.[63] Thus, covenants not to build higher than two floors or even to pay for upkeep of common areas touch and concern the land, but a covenant to supply the neighbor with a freshly baked muffin every morning would not. In a spirit of contractarianism and skepticism about the property-contract distinction, some have called for the elimination of touch and concern.[64] However, without it or some substitute,

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[59] The idea that notice cures all or almost all, is a perennial one. Richard A. Epstein, Notice and Freedom of Contract in the Law of Servitudes, 55 S. Cal. L. Rev. 1353, 1360 (1982); see also Klerman & Bechtold, supra note 56. For arguments that notice is not always enough, see Merrill & Smith, supra note 31; Smith, supra note 2.

[60] Henry E. Smith, The Language of Property: Form, Context, and Audience, 55 Stan. L. Rev. 1105, 1115-25 (2003).

[61] 11 U.S.C. § 365.

[62] See, e.g., Neponsit Property Owners' Association, Inc. v. Emigrant Industrial Savings Bank, 15 N.E.2d 793 (N.Y. 1938). The Third Restatement does away with the touch and concern requirement, but this reform has not been adopted by courts thus far. Restatement of the Law Third, Property (Servitudes) § 3.2 (Am. L. Inst. 2000) (Touch-or-Concern Superseded); Note, Touch and Concern, the Restatement (Third) of Property: Servitudes, and a Proposal, 122 Harv. L. Rev. 938, 944–45 (2009).

[63] So far the best definition is the Bigelow Clark test. Charles E. Clark, Real Covenants and Other Interests Which "Run with Land" 97 (2d ed. 1947); Harry A. Bigelow, The Content of Covenants in Leases, 12 Mich. L. Rev. 639 (1914). For some justifications of touch and concern, see Jeffrey E. Stake, Toward an Economic Understanding of Touch and Concern, 1988 Duke L.J. 925 (1988); A. Dan Tarlock, Touch and Concern Is Dead, Long Live the Doctrine, 77 Neb. L. Rev. 804 (1998); Mark Kelman, Revisiting Touch and Concern: The Perils of Degraded Contracts versus the Perils of Opportunism, 9 Tex. A&M J. Prop. L. 263 (2023).

[64] Restatement Third, supra note 62, § 3.2; Susan F. French, Comment, The Touch and Concern Doctrine and the Restatement (Third) of Servitudes: A Tribute to Lawrence E. Berger, 77 Neb. L. Rev. 653 (1998); Epstein, supra note 59, at 1360, see also Glen O. Robinson, Personal Property Servitudes, 71 U. Chi. L. Rev. 1449, 1461, 1485-86 (2004).

one can start reengineering property rights in contravention of the *numerus clausus*, with potential implications for information costs and complexity.

It is true that security interests have a similar effect of binding successors, but this provides little reassurance. The absolute priority of security interests has been questioned for this very reason of impacting nonconsenting nonadjusting creditors.[65] Furthermore, when it comes to impacting third parties, the law allows it when it is considered on balance (rightly or wrongly) to be overall beneficial to do so. Modes of acquiring property involve a power to create legal relations with nonconsenting third parties, so the law strictly rations the kind and scope of these. First possession is allowed, but many other conceivable ways of creating property are not. And first possession itself is calibrated to provide notice.[66] Thus, security interests (again rightly or wrongly) are in a kind of *numerus clausus* of mini property rights. License-based servitudes would go far beyond this, and there is little reason to think that they are among contractual relations that should receive blanket property-like deference.

To sum up, the interface between property and contract in intellectual property has special features, but this IP-specific property/contract interface is structurally similar to that in private law more generally. When property and contract come together, they do not mix freely. The interface between property and contract in intellectual property is more robust and standardized than other aspects of intellectual property law. Like powers and other second-order structures of the law, the property/contract interface is not subject to free tailoring by parties or even courts. Licensing is at the heart of intellectual property, but as we move from first-order contracting to the relationship of property and contract and the very contours of the law itself, especially the more platform-like aspects, we see more structure. That structure does more to contain information and complexity costs than it impinges on flexibility in the pursuit of law's purposes.

2.2 Property/Tort

Whereas property and contract come together in intellectual property much as they do in private law, the next two interfaces are somewhat special to intellectual property. The property/tort interface in intellectual property shows a similar stylized and limited set of interactions. However, these limits are achieved by specifying what an IP tort is. This is because tort as the most open-ended regime of private law would quickly become highly unbounded and complex if allowed to apply to intangible assets.

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[65] Henry B. Hansmann & Reinier Kraakman, Toward Unlimited Shareholder Liability for Corporate Torts," 100 Yale L.J. 1879 (1991); Lucian A. Bebchuk & Jesse Fried, The Uneasy Case for the Priority of Secured Claims in Bankruptcy, 105 Yale L.J. 857 (1996). For an empirical study suggestion that security interest are not in fact being used opportunistically against such creditors, see Yair Listokin, Is Secured Debt Used to Redistribute Value from Tort Claimants in Bankruptcy? An Empirical Analysis, 57 Duke L.J. 1037 (2008).

[66] Robert C. Ellickson, The Inevitable Trend Toward Universally Recognizable Signals of Property Claims: An Essay for Carol Rose, 19 Wm. & Mary Bill Rts. J. 1015 (2011); Carol M. Rose, Possession as the Origin of Property, 52 U. Chi. L. Rev. 73 (1985); Smith, supra note 60.

Many have noted this similarity of intellectual property infringement to a tort. The right holder can sue someone with whom there is no prior relationship and seek damages and sometimes an injunction. The right is in rem, and violation is defined in a way that more or less tracks property torts.[67] Patent law looks like trespass in using rough proxies and metaphorical boundary crossings to define liability for a range of unspecified uses.[68] Copyright by contrast is closer to a list of use rights and relies much more on a nuisance-like governance regime.[69] As I have argued elsewhere, these differences can be explained in terms of the uses of information in the two areas.[70] Patent covers a set of uses that are hard to foresee and interlock tightly, whereas copyright classically focuses on discrete activities where the overlap in terms of content is especially valuable and exclusion therefore costly.

This degree of nuance in terms of what tort-like regime applies would be difficult to achieve by employing tort law directly. Intellectual property is technically personal property, so we could ask what a regime based on conversion and trespass to personal property would look like. For any of the personal property torts to apply, we should have to decide that intellectual resources can be possessed (possession being a requirement in conversion and trespass to personal property), or we would have to change the definition of the property torts to include things that are controlled in some sense but not physically possessed.[71] Such a regime would be hugely expansive and would overprotect compared to current intellectual property law. Instead of targeted intellectual property law, this would be an open-ended invitation to create new kinds of intellectual property, because all that would be required would be the creation of a new intangible – something that without more is an unbounded process. The content of the intangible could be anything and tied to the value of other intangibles, as in financial engineering. As for trespass to personal property, it would be if anything more unbounded because the kinds of interferences extend to those that do not deny the continuing rights of the holder (as is required for the tort of conversion). Besides the substantive demerits of overprotection, such a regime would impose information costs willy-nilly on third parties. The information and complexity costs would be extreme.

Intellectual property does not work like this. Intellectual property defines its own system of wrongs, which bear some resemblance to but differ in important respects from those based on possession. One cannot possess a patent and one cannot convert it. By the same token, there is no

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[67] For commentary bringing out the similarities to a greater or lesser extent, see Poorna Mysoor, Copyright as Personal Property 140-49 (2025); Patrick R. Goold, IP Accidents, Negligence Liability in Intellectual Property (2022); Shyamkrishna Balganesh, The Obligatory Structure of Copyright Law: Unbundling the Wrong of Copying, 125 Harv. L. Rev. 1664 (2012).

[68] Smith, supra note 20.

[69] Mala Chattterjee, Understanding Intellectual Property: Expression, Function, and Individuation, 70 J. Copyright Soc'y of the USA 57 (2023); Smith; see also Keith N. Hylton, Property Law and Copyright Law (ms.).

[70] Smith, supra note 20.

[71] Compare Simon Douglas, The Scope of Conversion: Property and Contract, 74 Mod. L. Rev. 329 (2011) (arguing against extending conversion to intangibles) with Sarah Green & John Randall, The Tort of Conversion (2009); João Marinotti, Possessing Intangibles, 116 Nw. U. L. Rev. 1227 (2022).

adverse possession of patents.[72] And copyright is violated when someone exercises one of the enumerated rights (to copy, perform, make a derivative work, etc.) without permission, and independent creation is a defense, unlike with property torts. Again, as with patents, copyrights do not involve possession as with rival resources, so there is no conversion or adverse possession.

The limit here is related to the economic loss rule. While there is liability for violating property rights through stealing and physical damage caused by negligence and the like, in one aspect of the rule there is generally no liability to someone experiencing economic loss who is the holder of a contractual right relating to the property but no property right.[73] Thus, if someone damages a ship, a person with a mere contractual right dependent on the operation of the ship has no claim against someone whose negligence puts the ship out of operation. Among the rationales for this rule is a worry about unbounded liability.[74] This is true as far as it goes, but the basic problem is the need to avoid letting contracts in all their unbounded detail bind third parties without their consent in an in rem fashion.

Another point of comparison is the tort of interference with contract. While this tort does make contract in a loose sense in rem, it is a highly limited sense that accords with an architecture motivated by complexity considerations. One is liable for tortious interference with contract if one knowingly induces another to breach a contract.[75] Not only is intent required (and no duty of inquiry imposed), it is crucial that liability is for the bare interference and not for the contractual duties themselves. Contractual duties are not being extended to third parties under the tort.

One problem with tort liability for intangibles is that the social interaction with them is fundamentally different than with tangible items. This is especially true of data files.[76] When one encounters a data file, does deleting it cause its "owner" to lose the information altogether or is the file one of many copies? Some intangibles do have an exclusive aspect in the sense that they

[72] At most one might be able to continue use of an invention if the statute of limitations has run on the patent holder's ability to use for infringement.

[73] See, e.g., Robins Dry Dock & Repair Co. v. Flint, 275 U.S. 303 (1927) (Holmes, J.); Ultramares Corp. v. Touche, 174 N.E. 441 (N.Y. 1931) (Cardozo, J.); Restatement of the Law Third, Torts: Liability for Harm § 7 (Am. L. Inst. 2020); see also Ward Farnsworth, The Economic Loss Rule, 50 Val. U. L. Rev. 545 (2016).

[74] Id. at 554-55; Fleming James, Jr., Limitations on Liability for Economic Loss Caused by Negligence: A Pragmatic Appraisal, 25 Vand. L. Rev. 43 (1972); see also, e.g., William Bishop, Economic Loss in Tort, 2 Oxford J. Legal Stud. 1 (1982); Robert L. Rabin, Tort Recovery for Negligently Inflicted Economic Loss: A Reassessment, 37 Stan. L. Rev. 1513 (1985).

[75] Lumley v. Gye, 2 El. & Bl. 216, 118 Eng. Rep. 749 (1853); Fred S. McChesney, Tortious Interference with Contract Versus "Efficient" Breach: Theory and Empirical Evidence, 28 J. Legal Stud. 131 (1999).

[76] Danielle D'Onfro, The New Bailments, 96 Wash. L. Rev. 97 (2022); James Grimmelmann & Christina Mulligan, Data Property, 72 Am. U. L. Rev. 829 (2023); Christopher M. Newman & Henry E. Smith, Capturing Intangibles in a Property Restatement, 38 Harv. J. L. & Tech. 895 (2025).

correspond to an activity that would be necessarily impaired by certain kinds of interference.[77] Blockchain-based assets, whatever their overall merits, do qualify as potential candidates for conversion in this sense.[78]

For these reasons, the property/tort interface is built into intellectual property law and is different for each intellectual property regime. Intellectual property law itself not only defines the entitlement, but it also defines what constitutes an infringement or violation. In patent law, this is a relatively more thing-based entitlement (invention) that is a stand-in for a wide and nonenumerated set of uses (make-use-sell). By contrast, copyright defines various use rights and puts relatively little effort into defining what a thing is (expression). Moreover, in light of the central role played by fair use doctrine, the resemblance to nuisance in its more governance-like aspects is striking. Generally, "fluid property" is more oriented to governance rather than exclusion.[79] This calibration of property strategies is possible because the "tort" of infringement is built into intellectual property rather than imposed by general tort law as applied directly to entitlements.

It is worth emphasizing that these bespoke interfaces between property and tort in intellectual property are quite constrained and keep property and tort from bleeding into each other and becoming boundless. In terms of the higher-order private-law architecture of intellectual property, this is an ontology of activities somewhat specific to intellectual property. Specifying activities is one way for tort law to achieve modularity,[80] and private law does this in its own characteristic and constrained way.

2.3. Contract/Tort

As we have just seen, the structure of intellectual property law prevents contract duties from being imposed through tort law on third parties. We have also seen that traditionally contract and property come together in a simple way in which a licensee's activity beyond the scope of a license is subject to the tort-like intellectual property regime.

Stepping back, intellectual property as a property regime is a source of constraint rather than, as is usually assumed, the opening wedge for overprotection. Property with its somewhat

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[77] Timothy Chan, The Nature of Cryptoassets, 43 Legal Stud. 480, 485-88 (2023); João Marinotti, Tangibility as Technology, 37 Ga. St. U. L. Rev. 261 (2021); Newman & Smith, supra note 76; cf. James Y. Stern, Intellectual Property and the Myth of Nonrivalry, 99 Notre Dame L. Rev. 1163, 1189-1205 (2024).

[78] Id.; Kelvin F.K. Low, Cryptoassets and the Renaissance of the Tertium Quid?, in Research Handbook on Property Law and Theory (Chris Bevan ed., 2024); Kelvin F.K. Low & Ernie G.S. Teo, Bitcoins and Other Cryptocurrencies as Property?, 9 L., Innovation, & Tech. 235, 252-54 (2017); but see Robert Stevens, Crypto Is Not Property, 139 L.Q. Rev. 615, 621 (2023).

[79] Smith, supra note 19.

[80] Smith, supra note 25.

invariable platform and its interface with contract does not permit unlimited tailoring of private law rights or the creation of new kinds of private law rights through general tort law.[81]

Another avenue for overexpansive intellectual property that is largely blocked by private law architecture would be a free combination of contract and tort through torts of misappropriation and interference with economic activities. Sometimes interference torts are presented as narrower and more targeted alternatives to intellectual property rights. There is some truth in this when we look at individual proposed interference torts.[82] However, the idea that in principle we can protect more in personam relations in a more in rem fashion is again a potential source of troublesome overexpansion and a vehicle for imposing nonconsensual and information-rich burdens on third parties.

Consider again licensing in intellectual property. If the law allowed contractual parties to sue those who impeded the performance of a contractual duty or even required them to facilitate it, the law would be imposing onerous and informationally intense burdens on nonconsenting third parties. This would be very unlike the tort of tortious interference with contract, which does not turn contractual duties form in personam to in rem but rather protects against interference overall.[83] Licensing, like contract, requires cabining, in the sense that information-rich in personam legal relations need to be kept from becoming in rem and impacting nonconsenting third parties.

After all, despite the exceptions made to privity requirements in tort law standing doctrine, the principle of privity is still deeply entrenched in private law architecture.[84] Privity could be thought of as an aspect of the ontology of contract and presents contract's face to other areas of private law. But for the principle of privity, a more expansive intellectual property would be right around the corner.

2.4. Law, Equity, and Restitution

Another interface that is notable mostly for its absence in intellectual property is that between private law areas on the one hand and restitution and equity on the other. This is remarkable because one might say that from a policy point of view, ideas of restitution have some role to play in how we think about compensating creators.[85]

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[81] For an argument that the *numerus clausus* in intellectual property law is too weak in other respects, see Christina Mulligan, A *Numerus Clausus* Principle for Intellectual Property, 80 Tenn. L. Rev. 235 (2013).

[82] See Shyamkrishna Balganesh, Copyright as Market Prospect, 166 U. Pa. L. Rev., 443 (2018). Caution is warranted because interference torts and misappropriation have their own potential for overexpansion. Henry E. Smith, Equitable Intellectual Property: What's Wrong With Misappropriation?, in Intellectual Property and the Common Law 42 (Shyamkrishna Balganesh ed., 2013).

[83] See supra note 75 and accompanying text.

[84] See Gergen, supra note 32.

[85] Wendy J. Gordon, On Owning Information: Intellectual Property and the Restitutionary Impulse, 78 Va. L. Rev. 149 (1992).

What we don't find are freestanding claims for restitution for use of information. The lack of definition and information costs on nonconsenting third parties would be extreme. It is also worth noting where we could conceivably use restitution but do not. In commercialization theories of patent law, the reward is for commercialization – using inputs to develop and market the invention rather than the act of inventing itself.[86] We could imagine a regime in which, instead of property rights to inventions, one could claim for restitution claim for benefits from commercialization. However, we never use liens to trace these contributions to those who eventually benefit from them. Again, the overwhelming informational demands are obvious.

There are more limited ways in which restitution and equity may enter the area of intellectual property, but they are notable for their extreme limitations.[87] Emblematic of this is the hot news doctrine of *International New Service v. Associated Press*.[88] Many see this as a potential generator of property rights and a reap-where-you-sow-principle.[89] However, on its own terms, the opinion is much narrower. It is couched as quasi-property, which is not in rem but only avails between competitors in the same industry. And the theory of liability may be more limited than it is often taken to be. Shyamkrishna Balganesh has argued that the liability is for restitution for unjust enrichment where one competitor benefits from a common institution, here news gathering.[90] I have argued elsewhere that the case is, as the opinion emphasizes, one in equity where misappropriation tracks commercial morality, perhaps based in custom.[91] Under neither view is the right in rem, and at least aspirationally the kind of liability is narrow (not reap where you sow). Nevertheless, the idea of restitution or equitable enforcement of custom is broad enough that enforcement in an in rem context would be quite broad and would indeed be a threat to other values.

3. Intellectual Property and Private Law Theory

This tour of the private law interfaces within intellectual property leads to some further surprising observations. The structures of private law provide defined interfaces in intellectual property that help prevent overprotection and serve to manage information and complexity costs. In this, intellectual property is like private law more generally.

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[86] F. Scott Kieff, Property Rights and Property Rules for Commercializing Inventions, 85 Minn. L. Rev. 697 (2001); Giles S. Rich, The Relation between Patent Practices and the Anti-Monopoly Laws, J. Pat. Off. Soc'y 159, 177-80 (1942); see also Edmund W. Kitch, The Nature and Function of the Patent System, 20 J.L. & Econ. 265, 276-77, 284 (1977); but cf. Ted Sichelman, Commercializing Patents, 62 Stan. L. Rev. 341 (2010).

[87] See Mysoor.

[88] 248 U.S. 215 (1918).

[89] The Court misleadingly chastised the defendant for trying "to reap where it has not sown," 248 U.S. at 239. See Douglas G. Baird, Common Law Intellectual Property and the Legacy of *International News Service v. Associated Press*, 50 U. Chi. L. Rev. 411, 419 (1983).

[90] Shyamkrishna Balganesh, Hot News: The Enduring Myth of Property in News, 111 Colum. L. Rev. 419 (2011).

[91] Smith, supra note 82).

But intellectual property is not exactly like more familiar areas of private law. We can ask some very general questions about private law, which have special implications for intellectual property.

In private law, higher-order structures like interfaces impose constraints on first-order law. Property and contract are not allowed to combine in any way whatever. Moreover, parties are not allowed to alter second-order structures, in contrast to the primary level, where freedom of contract holds more sway. Freedom of contract does not extend to the architecture of contract law itself. And principles like privity and the *numerus clausus* prevent contract and property from becoming overly complex and even dissolving into each other.

This second-order structure is something the law must provide and even protect against party tailoring that might undermine it. If, as Henry Hansmann and Reinier Kraakman argue, organizational law has an essential role of asset partitioning – a property function – because it could not be accomplished by contract, we can see that something similar and stronger is true at a higher level. The kinds of interfaces and basic structures of private law could not be created out of contract, because the transaction costs would be astronomical. But there is more. As with the *numerus clausus*, these structures need to be insulated against party contracting that would de-modularize them and create complexity externalities.

The next question is where this second-order structure comes from. For it to work as I have suggested it should, it cannot be totally up for grabs. There is a range of candidates for sources. One traditional source of nonarbitrariness was natural law.[92] This could be the source of the principle that actors cannot impose duties on third parties without their consent except in circumscribed ways (like acquisition by first possession). Another potential source of baselines could be some versions of idealism, including Kantianism, which see the basic structures of private law as nonarbitrary.[93] This starts with the bilateral stricture of private law, especially tort law, as emphasized by Ernest Weinrib. In a nonmoralized version of structure, Adolf Reinach argued that the law is built on a layer of presuppositions that could not be otherwise.[94] More naturalized approaches to jurisprudence would see the structures like the interfaces explored here as part of human psychology.[95] Or perhaps law set in its social context with interactions on the

[92] Stuart Banner, The Decline of Natural Law: How American Lawyers Once Used Natural Law and Why They Stopped (2021); R.H. Helmholz, Natural Law in Court: A History of Legal Theory in Practice (2015). For modern versions in the area of property, see Eric R. Claeys, Natural Property Rights (2025); Adam J. MacLeod, Property and Practical Reason (2015).

[93] Arthur Ripstein, Private Wrongs (2016); Weinrib, supra note 24.

[94] Adolf Reinach, The Apriori Foundations of the Civil Law (JF Crosby trans., ontos verlag 2012), originally published as Adolf Reinach, Die apriorischen Grundlagen des bürgerlichen Rechtes, 1(2) Jahrbuch für Philosophie und phänomenologische Forschung (Max Niemeyer 1913), 685-847; Andrew S. Gold & Henry E. Smith, Legal Concepts as a Deep Structure of the Law: Reinach's A Priori in Action, in Reinach and the Foundations of Private Law 125 (Marietta Auer et al. eds., 2025).

[95] James Toomey, Property's Boundaries, 109 Va. L. Rev. (2023).

micro-level will self-organize in only certain ways.[96] On this approach, cooperative behavior, including agreements, precedes contract law, and mutual forbearance leads to norms of possession and property law.[97]

Intellectual property raises many of these issues in private law, but if anything the source of solutions is less apparent. Although some of the natural law principles of general private law are now background assumptions or receive policy justifications, intellectual property does not have as deep roots in the legal tradition. Moreover, in the U.S., the justification for intellectual property is largely utilitarian and commercial.[98] And although intellectual property borrows from private law, intellectual property is a largely designed order. The combination of utilitarian justification and the role of design makes an engineering approach attractive. On such an approach, it is tempting to simplify problems by ignoring the function of the higher-level structures we have focused on. Nevertheless, as we have seen, these structures, including the interfaces between private law modules, serve a function of permitting the law to achieve its purposes flexibly.

Moreover, when theorists and policy makers consider the role of private law in intellectual property and whether and to what extent justifications in the former carry over to the latter, the question is usually framed exclusively at a high level of generality. Thus, we have discussions of Lockean and Hegelian approaches to whether intellectual property in general can be justified on the basis of labor or personhood (respectively).[99] And utilitarian perspectives are offered on whether incentives from property rights increase social welfare or not. Sometimes areas like patent and copyright are distinguished based on different purposes or incentives. Beyond that, the more specific structures of private law receive relatively little attention. This should not be surprising, because until recently such structures did not receive all that much attention in discussions of private law either.

If second-order structure in the private law of intellectual property is important and if the interfaces between modular areas of private law operate within the domain of intellectual property, we need a different kind of theorizing. As in other complex systems, we can ask how the micro level relates to the macro.[100] In regular private law, many of the kinds of interactions

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[96] Ted Sichelman & Henry E. Smith, A Network Model of Legal Relations, 382 Philosophical Transactions of The Royal Society A 20230153 (2024).

[97] Friedman, supra note 23. The scaling up of basic interactions to law as a whole is straightforward. This picture appeals in particular to libertarians and classical liberals because it stresses spontaneous order and downplays the desirability of humanly designed interventions at the collective level.

[98] See Robert P. Merges, Justifying Intellectual Property 2-3 (2011) (noting the traditional utilitarian justifications for IP and noting lack of evidence as motivation search for other mid-level principles).

[99] For more fine-grained approaches, see, e.g., Abraham Drassinower, What's Wrong with Copying? (2015); Merges, supra note 98; Mala Chatterjee, Intellectual Property, Independent Creation, and the Lockean Commons," 12 UC Irvine Law Review 747 (2022); Justin Hughes, The Philosophy of Intellectual Property, 77 Geo. L.J. 287 (1988).

[100] Gold & Smith, supra note 25.

between people go back a long way, are very concrete, and benefit from the familiarity we all have in engaging in them ourselves (or imagining doing so).

What is needed is a rough sense of how emergent properties at the societal level are nontrivially related to micro behavior. In postrealist fashion, what is the most familiar is the society-wide purposes that intellectual property should serve (if it works) and at the micro level the incentives afforded by the value of the exercise of intellectual property rights. What the architectural approach to private law adds to this picture is that the delineation of property rights needs to focus on the participant-level perspective in terms of processing nonconsensual duties. While it is true that nonrivalness is relevant for how intellectual property is or is not analogous to property, this is true in another subtle sense as well. The lack of "natural" exclusion means that actors interact with each other with respect to information very differently than in the case of traditional property. Physical efforts at exclusion and uses that displace use by others are harnessed by regular property to make the law navigable – none of which is true in intellectual property or property in intangibles more generally. As Christopher Newman and I have argued for property in intangibles, we need to return to first principles of how people encounter informational resources and their social practices around them.[101] Only then can we ask about the benefits and costs of alternate delineations of rights (or no rights at all). The data file is an interesting example, because strong rights do not accord with how we approach a data file. On the other hand, it might make sense to provide some protection for data files despite the idea that at a more granular technical level there is no contiguous entity that can be easily identified as a file at all.

This kind of analysis should be both familiar and strange. The architectural approach to private law suggests that it has structure, levels, or even dimensions that are usually overlooked. In the satirical novella *Flatland*, those in a world of n dimension saw figures in $n + 1$ dimensions very differently than those in the n-dimensional world (for example, a sphere entering the two-dimensional world of Flatland looked like a point and then an increasing circle, etc.).[102] It was also true that emerging from a world of n dimensions into one with $n + 1$ was disorienting. Something similar may be true of private law, especially in relation to intellectual property. What private law does for intellectual property looks different and arbitrary if all the structure, including higher-level constraints at the interfaces of property, contract, and tort are collapsed into a concrete but flat picture. A postrealist focus on the external facts with a wave of the hand at the structure of private law as a system makes private law look irrelevant at best or more likely to present an obstacle to promoting innovation, fostering expression, preventing consumer confusion, and the like.

At the same time, recognizing the architecture in private law gives us a fuller picture that can be strange yet oddly familiar: it features some of the landmarks like the *numerus clausus*, privity, and separation of property, contract, and tort, but through the looking glass of intangible and nonrival resources. If we go beyond flat private law and take seriously the law as a system – a complex system and one that is open and nondeductive – we see that private law does a lot more than provide a heap of rules that offer incentives – the view from Flatland. Instead, private

[101] Newman & Smith, supra note 76.

[102] Edwin A. Abbott, Flatland: A Romance of Many Dimensions (2005) (1884).

law provides higher-order structures that include IP-oriented versions of the interfaces between the areas of private law – property, contract, tort, and restitution. Far from causing rigidity in intellectual property, these structures permit intellectual property to serve its purposes more flexibly and with greater dynamism. And this architecture prevents the proliferation of information costs and cascading complexity that might occur if these modular structures were more open to tinkering by private parties. In its baselines and interfaces at this higher level, private law is an important infrastructure for intellectual property.

Conclusion

Private law and property contribute to intellectual property by lending it a systemic aspect, an overall architecture. This system is not rigid and deductive but loose open and flexible. And the system is made up of very different components that interact to produce the overall features of the system. Intellectual property is not all about exclusion: it combines elements of exclusion and governance in different proportions and different ways depending on the nature of the subject matter. The private law interfaces between the basic areas of private law within the domain of intellectual property provide a modular structure that needs to be insulated against some forms of tailoring. Nonetheless, this contribution of private law is what allows intellectual property to adapt flexibly to technological change while still providing a stable platform for planning and transacting.