

NOTES ON A GEOGRAPHY OF KNOWLEDGE

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INTRODUCTION

Unanswered age-old questions lurk behind disruptions caused by cutting-edge information technologies, associated social practices, and the various legal solutions that follow. This essay takes up one of them. How might one sketch relationships between knowledge and law?

Many people who think about knowledge in terms of law and policy think about using law to produce more knowledge, because new knowledge is an important output of social systems. Others think in terms of using law to ensure access to knowledge, because existing knowledge is an important input to social systems. When these two modes of thinking are combined, for in fact they are two modestly different ways to conceive of a single relationship, they produce a scheme of knowledge and knowledge policy framed in terms of what intellectual property lawyers recognize as the metaphorical “balance.” Law and policy should provide incentives to innovate, create, and distribute knowledge, which may include powers to control and limit the use of knowledge. Public policy should also supply rights to access and use knowledge. The scheme should be designed to keep these interests in some equilibrium, which is not to say that they have to be weighted equally or that the equilibrium is always stable.¹ The various legal regimes of knowledge, usually represented as patent and copyright law, need both some incentive and some access. The ground shifts; the equilibrium sometimes shifts; “balance” is a verb as well as a noun.

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1. See generally Glynn S. Lunney, Jr., *Reexamining Copyright's Incentives-Access Paradigm*, 49 VAND. L. REV. 483 (1996) (explaining and critiquing the basic model). The competition-of-interests model is not limited to intellectual property contexts. Cf. Michael J. Madison, *Complexity and Copyright in Contradiction*, 18 CARDOZO ARTS & ENT. L.J. 125, 170 n.177 (2000) (citing *Abrams v. United States*, 250 U.S. 616, 624 (1919) (Holmes, J., dissenting)) (noting the common authorship of the “marketplace of ideas” metaphor for the First Amendment and the “aesthetic nondiscrimination” principle in copyright law).

As an account of the relationship between law and knowledge, the power of this sketch is limited. Those limits are twofold. First, each of the two, highly stylized dimensions of the account draws its positive force primarily from the negative field that surrounds the other. Such a model can have enormous power and utility within narrow domains. If the legal system has to decide whether a researcher's use of a patented invention is infringing or exempt as an "experimental" use, then the balance metaphor may be extremely helpful. In a broader sense, however, the balance model cannot serve as a *justification* for copyright and patent law, in the sense that neither copyright nor patent can be claimed to be legitimate and authoritative with respect to arguments about balance. Incentive and access arguments are grounded in further social and cultural arguments about knowledge. To the extent that they make claims to legitimacy and authority on behalf of the law, they support those claims only indirectly or implicitly, via claims about knowledge and specifically via claims in respect of the legitimacy and authority of knowledge itself.² If we do not have a firm grasp of the latter, our grasp of arguments about the legitimacy and authority of related law will also be weak. As a justification for law based on knowledge, the balance metaphor omits important dimensions.

Second, to the extent that the balance metaphor and its elements do make claims about knowledge and do offer justifications for legal regimes, those claims are temporal. One temporal claim is that law precedes knowledge, so that law is needed (first) so that knowledge will be produced (second). This claim is represented in the incentive portion of the metaphorical balance, and more generally in instrumental accounts of intellectual property law, both of which are parts of the long-standing Anglo-American justification for exclusive intellectual property rights.³ The related public goods account of intellectual property rights holds similarly that legal entitlements are necessary to overcome a failure of market processes to develop new knowledge.⁴ A second temporal claim is that knowledge precedes law, so that law is needed (second) in order to secure access to and use of knowledge (first). This claim is represented in the access and use

2. For very different but conceptually related accounts of how knowledge, law, and policy might relate to culture as a whole rather than only to narrow utilitarian goals, see YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM 1* (2006); William W. Fisher III, *Reconstructing the Fair Use Doctrine*, 101 HARV. L. REV. 1659 (1988); Madhavi Sunder, *IP³*, 59 STAN. L. REV. 257 (2006).

3. The U.S. Constitution declares that the point of intellectual property law is "Progress," U.S. CONST. art. I, § 8, cl. 8, which is to say that the law is justified by the production and distribution of knowledge, or something close to it. Intellectual property scholarship includes instrumentalist strands that Mark Lemley refers to as "ex post" justifications for intellectual property rights. See Mark A. Lemley, *Ex Ante Vers[us] Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129 (2004).

4. See Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1050–55 (2005).

portion of the metaphorical balance.⁵ It is also represented in justice-based accounts, often derived from the philosophy of John Locke, which hold that intellectual property rights are justified with respect to rewarding individuals who labor to produce knowledge, or recognizing the dignity of authors and inventors.⁶

The point illustrated by this second limit is likewise dimensional, and it rounds out the point illustrated by the first limit. Time is neither the exclusive measure of the relationship between law and knowledge nor an adequate justification for law related to knowledge. This essay offers an alternative conceptual framework for understanding that relationship and eventually for developing justifications for knowledge law, or multiple justifications, grounded in space as well as in time.⁷

The two are not wholly distinct, of course. This essay argues not that temporal justifications are wrong, only that they are necessarily incomplete. Turning the point around, it should be self-evident that justifications grounded in spatial conceptions are likewise incomplete; they need to be coupled with justifications grounded in time. But the temporal perspective is both well-established and largely taken for granted. The spatial perspective is neither. By sketching some notes on a *geography* of knowledge, this essay explores that omission.

Why explore? Lawyers and legal scholars should care about this because debates about the expansion and contraction of intellectual property rights in the twenty-first century are not only debates about whether these changes are good or right public policy. Instead, they are nothing less than debates about law's legitimacy and authority, in social and political terms.⁸ In theory, a discussion of justifications for law embraces justifications for the

5. Edmund Kitch's "prospect" theory of patent rights, criticized by Lemley, *supra* note 3, falls into this category. See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 265-66 (1977). The role of time in limiting the scope of intellectual property claims has been noted in copyright law, see Justin Hughes, *Fair Use Across Time*, 50 UCLA L. REV. 775 (2003); Joseph P. Liu, *Copyright and Time: A Proposal*, 101 MICH. L. REV. 409 (2002), and in patent law, see Mark A. Lemley, *The Changing Meaning of Patent Claim Terms*, 104 MICH. L. REV. 101 (2005).

6. See 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) (critiquing the application of Lockean theory to modern intellectual property law); Justin Hughes, *The Personality Interest of Artists and Inventors in Intellectual Property*, 16 CARDOZO ARTS & ENT. L.J. 81 (1998) (reviewing different constructions of personality interests).

7. Hari Osofsky wrote recently, "The dominance of the progress narrative in modernist thought valorized history's focus on time while devaluing geography's study of space." Hari M. Osofsky, *A Law and Geography Perspective on the New Haven School*, 32 YALE J. INT'L L. 421, 422 (2007). For a counterpart investigation of the concept of space in the context of networked information policy, see Julie E. Cohen, *Cyberspace as/and Space*, 107 COLUM. L. REV. 210 (2007).

8. Arguments about the legitimacy of positive law in light of background norms of property rights and fairness form the core of compelling narrative accounts of the modern patent system, see JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK* (2008), and the modern copyright system, see JESSICA LITMAN, *DIGITAL COPYRIGHT* (2001).

very idea of law itself, including the very ideas of knowledge-related law, such as the whole of copyright and patent law. In practice, that discussion is less interesting and useful than a narrower discussion of justifications both for changes to existing law and for specific legal and other cultural practices that depend, in part, on the law. For practical reasons, therefore, this essay is directed primarily to the latter. I note that the spatial perspective may scale down to the narrower issue of the legitimacy of legal claims concerning a particular item of knowledge—a particular copyrightable work of authorship or patentable invention—or may scale up to the far larger issue of justifications for law itself.

For reasons having to do with its possible application to larger, theoretical questions, there may be something in the spatial exploration for philosophers and social scientists, too. The practices of intellectual property law offer concrete applications for their inquiries into the nature of legitimacy and authority as concepts and as political categories.⁹ Moreover, modern knowledge law is not exclusively the domain of intellectual property law, so what follows, while grounded in close examination of intellectual property forms, should not be understood as limited to that domain. Nor is it necessarily limited to the broad domain of intellectual property law, to the narrow domain of specific forms, or to any particular scale in between.¹⁰ The ambiguities and tensions that I identify, and the questions that they provoke, may be relevant to understanding science and scientific evidence in legal settings and to understanding aspects of free speech and communications law. I leave those extensions for another time and place.

How should one approach re-asking questions about the relationship between law and knowledge? Rather than starting at the top of the conceptual ladder and scrutinizing the authentic purposes of intellectual property law (a task that other scholars have pursued at great length), I start at the bottom and use legal practice. Bearing the geographic metaphor in mind, my aim is not to map domains of practice, domains of law, or domains of knowledge. Instead, I explore the spaces of law and knowledge.

My specific interest is the intellectual property license, a legal and cultural form that serves a central intermediary role, or what might be called a boundary function, in cycles of knowledge practices. Knowledge circulates through a broad variety of settings and via a broad variety of practices: objects, markets, firms, disciplines, prices, institutions, and so on. One way to conceive of an intellectual property license is sequential. First, knowledge arises. Second, it is ratified in some intellectual property

9. For two very different recent offerings in this domain, see Frank I. Michelman, *Relative Constraint and Public Reason: What Is "The Work We Expect of Law"?*, 67 BROOK. L. REV. 963 (2002); Scott J. Shapiro, *Law, Plans, and Practical Reason*, 8 LEGAL THEORY 387 (2002).

10. That is, the questions that I suggest here might be asked in the context of legal rights, technologies that control access to and use of knowledge, social norms, and other intermediary institutions.

right. Third, that right gets licensed, usually as part of a commercial transaction. I suggest a different conception of licensing: that licenses manage transformations and transitions of knowledge from one socially or culturally sanctioned form or practice to another.

At the outset, therefore, this essay frames its inquiry with spatial metaphors (the *boundaries* managed by licenses) rather than temporal ones. Intellectual property licenses manage conceptual spaces. How do they do that? Lawyers, scholars, and judges know a great deal about the doctrines of intellectual property licensing, but there are also significant gaps and omissions in those doctrines. Those gaps are related to the incompleteness of licensing's boundary functions. Why and how a license should work as a boundary is a question of legitimacy and authority. That question, rather than legal doctrine as such, is this essay's focus. I suggest that inadequacies in the law and practice of intellectual property licensing have their bases in gaps and flaws in our understanding of knowledge itself. Licensing law and practice raise questions about the validity, authority, and legitimacy of intermediary legal forms. In turn, they raise questions about the validity, authority, and legitimacy of the heterogeneous legal forms and social practices that licensing depends upon, responds to, channels, and promotes. They raise questions, in short, about both law and knowledge themselves. This essay challenges the proposition that we have a solid understanding of the basis of intellectual property rules in the first place, and it challenges that understanding on the ground that modern intellectual property practice itself manifests deep uncertainties regarding the nature of knowledge.

I. A GEOGRAPHIC METHOD

What do we mean when we talk about knowledge? There is the philosopher's knowledge: justified true belief, propositional knowledge, and knowledge how and knowledge of, all of which require careful delineation of justification, truth, and belief.¹¹ There is the other philosopher's knowledge, phenomenal knowledge, which is not wholly distinct from our experience of the world.¹² Law and policy speak of knowledge in broader, looser, and more general terms, with a small "k" rather than a big "K," perhaps. Knowledge in the small "k" sense includes information about the world and ourselves, various forms and practices of art and science (in both classical and modern senses), tools for knowing (reason and belief), as well as the diverse products of knowing. This small "k" knowledge includes fiction, film, secrets, and computer programs.

I proceed in this "small k" sense. I do so not to avoid difficult philosophical and definitional questions but in order to approach them as a lawyer might, from a perspective grounded in form and function. I start

11. See *Epistemology*, STANFORD ENCYCLOPEDIA OF PHILOSOPHY, Dec. 14, 2005, <http://plato.stanford.edu/entries/epistemology/>.

12. See *Phenomenology*, STANFORD ENCYCLOPEDIA OF PHILOSOPHY, Nov. 16, 2003, <http://plato.stanford.edu/entries/phenomenology/>.

with the premise that there is an important, complicated, but nonetheless intelligible conversation to be had about knowledge without getting overly precise about the definition of what is knowledge and what is not. I include discursive knowledge, representational knowledge, and knowledge embodied in other forms of culture, including practices and objects. Knowledge embodies and encodes meaning, which can come and be understood at multiple layers. Knowledge may be distinguished from information or data, which typically lacks inflection via meaning. This distinction is not always precise, nor is it always useful. Exploring how to think about distinctions among and within forms of knowledge, and exploring how those distinctions are manifested in and promoted by legal forms, is precisely what this essay is about.

In specifying my scope, there is still a great deal to consider. Large practical and conceptual questions loom over each aspect of the knowledge landscape. There is the production of new knowledge. What is new? What is re-newed or re-mixed or re-organized knowledge, and where do those things come from, and why? There is the detection of existing knowledge. Modern society (not to mention patent and copyright law) valorizes the innovative and the creative, but a lot of valuable knowledge, even perhaps most great knowledge, is quite old or is available for knowing only with appropriate tools or conceptual or technical methods. What are the relationships between inventing or creating, on the one hand, and detecting, on the other? What are the relationships between these things and a third broad category of questions—the storage, organization, and retrieval of both existing and new knowledge?

Why do we care about any of these things? That question, too, has diverse answers. There is knowledge that is valuable for its own sake, knowledge that is valuable for instrumental reasons, and knowledge that is not valuable at all (perhaps because it is harmful, even if it is true), or that we do not know enough about yet to know whether it is valuable in any sense, or that we do not care about. What knowledge is meant to be used, and why? What is to be consumed? Changed? Preserved, and simply known? Some knowledge, perhaps most knowledge, is meant to be shared and distributed. Other knowledge is meant to remain secret, or be put only to limited use. Some knowledge (again, perhaps most) has both attributes. There is epistemology, knowledge about knowledge, a discipline to which this essay might be taken to contribute.

A geography of knowledge, and even a conceptual geography such as this one, can help situate these questions and some answers relative to each other. Even absent maps themselves, geography may be useful partly because it offers ways of knowing where you are and of getting from one place to another, but also and importantly because it offers ways of seeing the world. Geography offers the dual prospects of understanding

relationships of peoples and resources and of appreciating one's place, or places, in context.¹³

I do not suppose that we know for certain where we are starting off. I emphasize what we do not know about knowledge rather than what we do. Joseph Conrad's Marlow had a passion for maps. He went looking for the "blank spaces on the earth."¹⁴ I want to focus on the conceptual and metaphoric blank spaces of knowledge. Not only do we know less than we commonly believe about knowledge law and policy and specific things like copyright as property, access to the public domain, or the shareability of information, we also know less than we might believe about broader things like the nature of authority that knowledge exercises and that we exercise through knowledge.¹⁵

As often as not, the blank spaces of knowledge do not lie at the distant edges of the knowledge landscape. Instead, they constitute parts of the many overlapping dimensions that inhabit the entire space. We are not faced with a metaphoric map that is orderly in the center and somewhat uncertain at the margins. The boundaries of various knowledge domains are not and cannot be clearly and neatly marked, notwithstanding both doctrinal and scholarly efforts to carefully segregate various normative domains from one another.¹⁶ In her writing on globalization, Saskia Sassen uses the term "analytic borderlands" to describe contested, dynamic, physical, and discursive conditions that characterize passage from one domain to another.¹⁷ The blank spaces of knowledge occupy similar metaphoric borderlands.

13. It is a geography in part for the reasons articulated by Julie Cohen. The landscape of law, policy, and culture is "un-mapped" in both literal and metaphoric terms, even though we talk casually about landscapes and the public domain. See Julie E. Cohen, *Creativity and Culture in Copyright Theory*, 40 U.C. DAVIS L. REV. 1151 (2007); cf. Keith Aoki, *(Intellectual) Property and Sovereignty: Notes Toward a Cultural Geography of Authorship*, 48 STAN. L. REV. 1293 (1996) (describing the need to reimagine the equation of territoriality and sovereignty in intellectual property policy in the wake of globalization).

14. JOSEPH CONRAD, *HEART OF DARKNESS* 108 (Oxford Univ. Press rev. ed. 2002) (1902).

15. This essay continues my earlier explorations of authority and legitimacy in knowledge contexts. See, e.g., Michael J. Madison, *The Idea of the Law Review: Scholarship, Prestige and Open Access*, 10 LEWIS & CLARK L. REV. 901 (2006); Michael J. Madison, *Law as Design: Objects, Concepts, and Digital Things*, 56 CASE W. RES. L. REV. 381 (2005) [hereinafter Madison, *Things*]; Michael J. Madison, *Reconstructing the Software License*, 35 LOY. U. CHI. L.J. 275 (2003) [hereinafter Madison, *The Software License*].

16. See, e.g., *Dastar Corp. v. Twentieth Century Fox Film Corp.*, 539 U.S. 23, 33–34 (2003) (narrowing interpretation of trademark law to avoid perceived conflict with copyright); *Traffix Devices, Inc. v. Mktg. Displays, Inc.*, 532 U.S. 23 (2001) (limiting scope of trademark rights available in devices that are the subject of patent protection); Pamela Samuelson, *Mapping the Digital Public Domain: Threats and Opportunities*, LAW & CONTEMP. PROBS., Winter/Spring 2003, at 147, 150 (offering a conceptual and literal "map" of the elements of the public domain).

17. See SASKIA SASSEN, *TERRITORY, AUTHORITY, RIGHTS: FROM MEDIEVAL TO GLOBAL ASSEMBLAGES* 379–86 (2006). Julie Cohen previously borrowed Sassen's concept in her discussion of networked space. See Cohen, *supra* note 7, at 251.

With this metaphorically geographic approach, and using some recent cases from American courts, this essay uses some recent examples of intellectual property licensing and litigation to outline and describe some of this space. I point to how these examples of intellectual property practice mark not only the borderlands of both law and policy but also various forms of knowledge itself. Licensing law suggests that blank spaces within, between, and beyond the geography of knowledge are numerous, and that they have a complex character. Rather than feeding the dominant two-dimensional balance metaphor for intellectual property law and policy, licensing law likewise points to multiple dimensions of knowledge and to questions of legitimacy and authority.

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Any geographer has to bear in mind some important limitations. Here, those limitations include the fact that I am not the first explorer here. The questions that I am raising have been asked and answered in part in the context of science and technology.¹⁸ The character of authority of knowledge as represented in *legal* forms has not received as much scholarly attention, and where scholars have approached the question, they have rarely focused explicitly on questions of legitimacy as well as authority.¹⁹ Taking small initial steps into the territory, I begin with a few landmarks—in this context, salient recent cases that stake out the contours of some matters that seem to be settled and some that are not. I do not necessarily take settled matters as such. Instead, they are signs that law and policy have visited some places and explored some territory. Some features are more salient than others. Some operate at larger and more robust scales. Others are more fine grained. Some descriptions are clear and enduring. Some are tentative, even speculative.

There is the risk that the abstractions of geography will fail to relate back to human practice and experience.²⁰ Framing the exploration of knowledge by talking about licensing law is partly an effort to address this space. It is

18. On the related ideas of the authority of knowledge and knowledge of authority, which depend on hierarchies of individuals and of discourses, see PIERRE BOURDIEU, *OUTLINE OF A THEORY OF PRACTICE* (Richard Nice trans., Cambridge Univ. Press 1977) (1972); THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* (2d ed. 1970). By citing Bourdieu and Kuhn, I do not mean to adopt their theories or methods, or to argue that they are the first to raise questions about epistemology and authority. Cf. Max Weber, *The Three Types of Legitimate Rule*, in *COMPLEX ORGANIZATIONS* (A. Etzioni ed., Hans Gerth trans., Holt, Rinehart & Winston 1961) (1958) (and before Weber, there was Heidegger).

19. Notable exceptions include Mario Biagioli, *Patent Republic: Representing Inventions, Constructing Rights and Authors*, 73 *SOC. RES.* 1129 (2006); Annelise Riles, *The Anti-Network: Private Global Governance, Legal Knowledge, and the Legitimacy of the State*, 56 *AM. J. COMP. L.* 605 (2008); Fiona Murray & Scott Stern, *Do Formal Intellectual Property Rights Hinder the Free Flow of Scientific Knowledge? An Empirical Test of the Anti-Commons Hypothesis* (Nat'l Bureau of Econ. Research, Working Paper No. W11465, 2005).

20. Julie Cohen is almost alone in sounding this caution in the information context. See Cohen, *supra* note 7.

important to explore the spaces where concept and materiality converge, complement one another, and conflict. To some, an intellectual property license offends the sense that knowledge itself neither can nor should be controlled by law or otherwise.²¹ To others, the property interest embodied in the license represents the propriety that dignifies knowledge in the forms that society values, and the license should be valued, respected, and promoted as such.²² At another level altogether, contests over particular licenses and between particular parties are subsidiary to larger and more important cultural debates about the legitimacy of institutions of knowledge.²³ In a full description of the relationships among law and knowledge, all of these perspectives need to be accounted for, even if they cannot be completely reconciled.

Last, there are the lessons that critical geographers have taught before.²⁴ Geography represents history, power, and interest as well as description. It does not necessarily speak objectively about the natural world, and the geographer has a distinct perspective and is an agent and instrument of power. The found territory makes the geography. The geography makes the territory being found. Consider throughout this essay the sources of legitimacy and authority that are necessarily implicit in my own claims to knowledge. As a cultural adventurer, I am subject to and limited by default frameworks with which I am most familiar: the instinct to divide abstract “information” from meaning-inflected knowledge, knowledge as speech, and knowledge as intellectual property. Methodologically, my approach represents a partial synthesis that points to but that also assumes a multidisciplinary, pluralistic conclusion. I apply a bit of literary flourish to the scholarly argument because formal, functional, and conceptual approaches to problems in intellectual property licensing, as well as to knowledge itself, are all necessarily incomplete.

21. See Richard Stallman, Why “Open Source” Misses the Point of Free Software, <http://www.gnu.org/philosophy/open-source-misses-the-point.html> (last visited Mar. 23, 2009).

22. On the historical and philosophical connection between property forms and constructs of social propriety, see Carol M. Rose, *Property as Wealth, Property as Propriety*, in NOMOS XXXIII: COMPENSATORY JUSTICE 223 (John W. Chapman ed., 1991).

23. See MICHEL FOUCAULT, *THE ARCHAEOLOGY OF KNOWLEDGE* (A. M. Sheridan-Smith trans., Pantheon Books 1972).

24. See JEREMY BLACK, *MAPS AND POLITICS* (2d. ed. 2000); NICHOLAS K. BLOMLEY, *LAW, SPACE, AND THE GEOGRAPHIES OF POWER* (1994); J. B. HARLEY, *THE NEW NATURE OF MAPS: ESSAYS IN THE HISTORY OF CARTOGRAPHY* (Paul Laxton ed., 2001); DAVID HARVEY, *SPACES OF CAPITAL: TOWARDS A CRITICAL GEOGRAPHY* (2001); DENIS WOOD WITH JOHN FELS, *THE POWER OF MAPS* (1992). For examples of work describing the intersection of law and critical geography, see Jane Holder & Carolyn Harrison, *Connecting Law and Geography*, in *LAW AND GEOGRAPHY 3* (Jane Holder & Carolyn Harrison eds., 2003), and Hari M. Osofsky & Janet Koven Levit, *The Scale of Networks?: Local Climate Change Coalitions*, 8 CHI. J. INT’L L. 409 (2008).

II. LICENSES AND LANDMARKS

A. *Licenses*

Intellectual property licenses mediate between knowledge forms and practices. Narrowly, licenses mediate between parties to the license, between upstream and downstream knowledge enterprises, and between partners. Broadly and conceptually, knowledge licenses mediate between social and cultural knowledge practices. A license takes a knowledge enterprise of some social and cultural scope and encodes and represents it in a concrete legal form, which is then used to direct and orient that enterprise in some specific way in some other social or cultural setting. “Creativity” and “innovation,” which are the hallmarks and watchwords of the copyright and patent systems respectively, become manufacturing or marketing or other things. “Archiving” becomes merchandising. “Sharing” becomes access. As a result, licenses mediate between ways of thinking about knowledge, between what is known and unknown, what is familiar and unfamiliar, and what is fixed and what changes.

As a mediator, a license is a kind of fulcrum. Any fulcrum needs to be stable. In a legal system, it also needs to be authoritative and legitimate, that is, accepted and worthy of that acceptance. For these reasons it is important to understand what the fulcrum stands on. History and tradition largely dictate the forms of classic knowledge licenses, but their legitimacy appears to be closely bound up with the legitimacy of the underlying knowledge practices.

Consider a conventional patent licensing arrangement. A patent owner uses a manufacturing license to partner with a firm that produces goods that embody the patented invention. The license adopts a time-honored and commercially respectable documentary form. That form recites permission to use the state-granted intellectual property right, and it includes a reciprocal royalty obligation. A clear and centuries-old system of formal state authority is available to either party in case of noncompliance with the license. Within the patent system itself, this is all unremarkable. The license is serving a typical intermediary function. In the context of law and society more generally, however, why should courts, or anyone, regard the legal form and its enforcement as legitimate and authoritative?

The answer depends on a nested series of simple and powerful arguments, constructed metaphorically as if they were the walls of a medieval castle. At the outermost point, the license assumes the legitimacy of the patent regime. Moving inward, the legitimacy of the patent regime assumes its status as a legal system enacted according to the standard of the relevant state, which in American terms means Congress and the President following the dictates of the U.S. Constitution. In another country, that standard would be internal to its political system. In premodern intellectual property regimes, the legitimacy inquiry might end there. What we would call an intellectual property right using today’s nomenclature might have

been an exercise of pure political power. Unlike modern patents, which are creatures of legislation, letters patent were once the prerogative of the monarch.²⁵

In modern contexts, however, recourse to raw political power is insufficient to justify law generally. But in the intellectual property context, so too is recourse to the general proposition that the legitimacy of a democratically selected form of government suffices to justify the legitimacy of forms of law that are enacted and enforced by that government. Under the U.S. Constitution, the legitimacy of the enactment of patent and copyright law depends on the social (or, if you prefer, political) equation of “Progress,” the constitutional standard, with the knowledge that the patent system supports. Both inside and outside the patent system, and both today and earlier in American history, there exists a hypothetical but broad and powerful belief that the patent system encourages disclosure of innovative work and permits both appropriation of financial returns and cumulation of technological progress. The Constitution reflects and enacts that belief. The patent system renders knowledge legitimate and authoritative by wrapping it in the authority of the state. I use the term knowledge broadly here; a patent is itself a species of codified knowledge.²⁶ The patent system adopts and applies the authority of the state precisely because the relevant knowledge is legitimate and authoritative in the first place. That legitimacy extends through and includes performance and enforcement of the license. The license is recognized as legitimate and authoritative precisely because the knowledge that the license supports is itself recognized as legitimate and authoritative.²⁷

This is not to say that a court could or should refuse to enforce an intellectual property license if it decides that a particular transaction fails to comport with some judicial sense of “Progress.” Nor do I argue that a patent system might be justified only with regard to arguments about the legitimacy and authority of knowledge itself. As noted above, the patent system might be justified by reference to political legitimacy as such.

25. See Craig Allen Nard & Andrew P. Morriss, *Constitutionalizing Patents: From Venice to Philadelphia*, 2 REV. L. & ECON. 223 (2006) (describing the progressive “constitutionalization” of patent law as a measure designed to ensure its legitimacy). The legitimacy of some monarchs was grounded in their divinity. See EDWARD L. RUBIN, *BEYOND CAMELOT: RETHINKING POLITICS AND LAW FOR THE MODERN STATE* 26–29 (2005).

26. See Dan L. Burk, *The Role of Patent Law in Knowledge Codification*, 23 BERKELEY TECH. L.J. 1009 (2008).

27. I am cognizant of the intransitive and passive construction here. Who is recognizing the legitimacy of patented and copyrighted knowledge, and on what basis? Patent law and copyright law give different answers. Patent law relies in part on an internal perspective, the perspective of the skilled artisan. See Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885 (2004). At different times, copyright law adopts internal perspectives, external perspectives, and both at once. See Alfred C. Yen, *Copyright Opinions and Aesthetic Theory*, 71 S. CAL. L. REV. 247 (1998).

In modern society, claims about intellectual property law and policy are closely aligned with claims about knowledge. The nesting of the domains of legitimacy described in the last paragraphs is quite strong, despite being contingent in a historical sense. The connection between the authority and legitimacy of knowledge and the authority and legitimacy of particular intellectual property forms is so strong, in fact, that it is rarely questioned. Even notable, vocal critics of contemporary intellectual property law pay homage to the foundational point that copyright and patent are good things, at bottom, and need only be tweaked to be better aligned with social and cultural goals.²⁸ American courts almost universally refuse to engage in case-by-case analysis of whether intellectual property rights are serving “Progress” in a constitutional sense,²⁹ which is itself evidence of the power of the regime’s foundational premises regarding what knowledge is, where it comes from, and what it is good for.

The fact that the legitimacy question almost never gets asked at ground level, in the case of particular licenses, is precisely what makes a geography of knowledge an interesting proposition. Moreover, a genuine and open inquiry into the legitimacy of any law founded on claims about knowledge should not take the legitimacy of intellectual property law for granted. Let us not assume the robustness of the metaphoric castle and its associated domains. Let us not assume that the justification for the intellectual property regime is so powerful at its top levels that the details of specific practices never need to be questioned. Instead, postulating the absence of such a justification creates the first of the blank spaces to be explored. What happens when the system’s foundational premises are questioned and are questioned not merely in the mundane sense that some party believes that enforcement of an intellectual property right does not serve constitutional “Progress”? What happens when challenges to the system’s authority arise from ground-level departures from the knowledge-related assumptions on which the entire argument is based? What happens in a broad sense when the legitimacy and authority of knowledge itself are questioned in the narrow case, in which the parties and interests that are usually mediated by licenses are not necessarily the things being mediated in a particular case, or with a particular form? Knowledge itself may not be what it appears to be, or to come from what (or where) we believe it comes

28. See, e.g., JAMES BOYLE, *THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND*, at xii (2008) (“I do not write this as an enemy of intellectual property, a dot-communist ready to end all property rights; in fact, I am a fan. It is precisely *because* I am a fan that I am so alarmed about the direction we are taking.”).

29. See *Eldred v. Ashcroft*, 537 U.S. 186, 221 (2003) (confirming the Court’s deference to congressional judgment regarding the constitutionality of copyright legislation, so long as the “traditional contours of copyright protection” are respected). The legal standard for recognizing a copyright in a creative work is astonishingly low, all but precluding meaningful review of “Progress” in the context of a particular work. The U.S. Supreme Court has recently suggested some modest limits on patentable subject matter, inspired by the constitutional mandate regarding “Progress.” See *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (rejecting exclusive use of the “teaching, suggestion, motivation” test for assessing obviousness under § 103 of the Patent Act).

from. In some modern contexts, nothing is upstream and downstream in conventional terms, or parties are upstream and downstream simultaneously. Other, unexpected continuities and discontinuities may appear.

B. Landmarks

To make this concrete and to illustrate how these questions might be elaborated and a set of possible responses might be mapped, I begin with some landmarks. Conceptual borderlands should be described in cognitive terms, according to what is salient or otherwise significant in human experience.³⁰

Some landmarks come from salient anecdotes concerning licenses and related forms that sometimes suffer on grounds of questionable legitimacy. Software licenses have long perplexed legal scholars because they do not track commercial practices associated with more conventional knowledge products, such as books.³¹ Copies of computer programs are “licensed,” though copies of books are sold. Not all software licenses look or work the same way. “Proprietary” licenses that shield computer code from popular access and “open” or open source licenses that mandate the disclosure of computer code are troubling for related but distinct reasons.³² Creative Commons licenses create conditions on the use of copyrighted material that try to ensure that later uses by later users are *not* impaired.³³

Restrictive licenses marry the license concept to tangible chattels, a move that triggers skepticism in most observers but that may be difficult to distinguish from software licenses if the “chattel” is wholly or partly electronic. “One time use” or limited-use licenses and products take a number of modern forms, including single-use cameras developed by Fuji,³⁴ Lexmark’s nonrefillable ink cartridges for computer printers,³⁵

30. Cf. KEVIN LYNCH, *THE IMAGE OF THE CITY* 46–49 (1960) (describing the concept of imageability, or cognitive salience, in studies of citizen perceptions of urban geography).

31. See Michael J. Madison, *Legal-Ware: Contract and Copyright in the Digital Age*, 67 *FORDHAM L. REV.* 1025, 1035–48 (1998) (contrasting cultural understandings that surround books with emerging understandings for digital content). There are reasons for the difference, though it is not clear whether those reasons are adequate as descriptions or as justifications of the phenomenon.

32. See David McGowan, *Legal Implications of Open-Source Software*, 2001 *U. ILL. L. REV.* 241 (offering the first and, perhaps still, the best account of the legal puzzles introduced by open source licenses).

33. See Creative Commons, About, <http://creativecommons.org/about/> (last visited Feb. 23, 2009).

34. See *Jazz Photo Corp. v. Int’l Trade Comm’n*, 264 F.3d 1094 (Fed. Cir. 2001) (reversing judgment of patent infringement against remanufacturers of single-use film cameras).

35. See *Ariz. Cartridge Remanufacturers Ass’n v. Lexmark Int’l, Inc.*, 421 F.3d 981 (9th Cir. 2005) (finding that single-use restriction on printer cartridges did not violate California unfair competition law).

sterile seeds marketed by Monsanto,³⁶ and single-use medical devices that must be thrown away.

Restrictive notices have a long historical pedigree. They prompted litigation in the nineteenth century by a producer of buckles for bale ties on nineteenth-century cotton³⁷ and appeared on motion picture projection equipment in the early twentieth century.³⁸ They were used on early prerecorded vinyl records³⁹ and on videocassettes and DVDs nearly one hundred years later.⁴⁰

The doctrinal puzzles here bedevil lawyers and judges. No unambiguous rule regarding the validity of use restrictions has emerged, though it is likely fair to say that the law takes a dim view of manufacturers' imposing unilateral use restrictions on the use of things that they sell outright. More important, however, these anecdotes expose some underexplored conceptual territory. Are these conventional copyright and patent licensing practices writ into novel technologies? Are these objects that have been bought and sold and shared subject to terms and conditions, as objects have circulated for centuries? Do they present old problems, new problems, or changed conditions that expose gaps in our existing understandings? If the licenses are mediating different constructions of knowledge, what are they mediating, and how?

A second set of landmarks, prompting related questions, comes from recent cases. Knowledge licensing can take almost any form: transactions grounded in patent, copyright, trademark, or the law of trade secrets or know-how; permissions and restrictions relating to the use and disposition of material things and places; and rules regarding proper and improper use of knowledge that we think of as inherently public, such as ideas and information about the world. These landmarks constitute a snapshot of recent cases featuring American courts dealing directly with licenses and indirectly with questions about the shapes of knowledge. The first case involves patent law and the doctrine of exhaustion of patent rights. The rest are copyright cases, involving a proprietary license, an open source license,

36. See Dan L. Burk, *DNA Rules: Legal and Conceptual Implications of Biological "Lock-Out" Systems*, 92 CAL. L. REV. 1553 (2004) (describing the legal implications of "self-policing" seed technology).

37. See *Am. Cotton-Tie Co. v. Simmons*, 106 U.S. 89 (1882); *Am. Cotton-Tie Supply Co. v. Bullard*, 1 F. Cas. 625 (C.C.S.D.N.Y. 1879) (No. 294) (reviewing cases and granting injunction); Madison, *Things*, *supra* note 15, at 430–31.

38. See *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502 (1917) (invalidating the license restriction as beyond the scope of the patent grant).

39. See *RCA Mfg. Co. v. Whiteman*, 114 F.2d 86 (2d Cir. 1940) (Hand, J.) (refusing to enforce a legend reading "Not Licensed for Radio Broadcast" that appeared on phonograph records).

40. To quote legends from two objects that I picked off my shelf at home: "This videocassette is for private home viewing only. It is not licensed for any other use." *GOOD WILL HUNTING* (Miramax 1997) (VHS videocassette). "Licensed for private viewing only. Any other use prohibited." *IRON MAN* (Paramount Pictures 2008) (Bluray). In each example, and as with the legend in *RCA Manufacturing v. Whiteman*, the positioning and size of the legend make it all but impossible for any user of the object to see or read the text in the course of ordinary use of the film.

restrictive notices, and in one case a transaction with no express license or notice at all. Several of them deal with software or other digital content, others with manufacturing licenses or the equivalent. The cases deal initially with intersections between “proprietary” and “open” knowledge and often with the presumption that there is dominant “commercial” innovation and servient “other social systems” of innovation.

As with the anecdotal landmarks above, they open up a set of questions that are more conceptually challenging than the doctrinal conflicts that they expose. What is dominant and what is servient, for example, is less clear than we may think. This snapshot highlights some important topics but does not capture all of them, and the resolution of these cases should be understood as illustrative, not determinative or exhaustive. These are landmarks in the sense that they anchor the exploration to follow. No case example is ever a perfect illustration of a single point. Each one points in multiple directions. Knowledge is embedded in broader institutional, metaphorical, and material contexts. The rest of this section lays out the examples. The next part explores a geography.

1. *Quanta Computer, Inc. v. LG Electronics, Inc.*

In *Quanta Computer, Inc. v. LG Electronics, Inc.*,⁴¹ LG Electronics, Inc. (LGE) licensed a portfolio of patents to Intel Corp. in an express, bilateral, negotiated agreement, for Intel’s use in connection with manufacturing and selling microprocessors and chipsets. On the one hand, the license agreement authorized Intel to “make, use, sell (directly or indirectly), offer to sell, import or otherwise dispose of” its own products practicing the LGE Patents.”⁴² On the other hand, the license specifically stated that no license

“is granted by either party hereto . . . to any third party for the combination by a third party of Licensed Products of either party with items, components, or the like acquired . . . from sources other than a party hereto, or for the use, import, offer for sale or sale of such combination.”⁴³

Intel advised purchasers of its products

that, while it had obtained a broad license “ensur[ing] that any Intel product that you purchase is licensed by LGE and thus does not infringe any patent held by LGE,” the license “does not extend, expressly or by implication, to any product that you make by combining an Intel product with any non-Intel product.”⁴⁴

Quanta Computer, Inc. purchased Intel products containing LGE’s patented technology and combined those products with other computer

41. 128 S. Ct. 2109 (2008).

42. *Id.* at 2114 (quoting Brief for Petitioners at 8, *Quanta*, 128 S. Ct. 2109 (No. 06-937)).

43. *Id.* (quoting Brief for Petitioners, *supra* note 41, at 8).

44. *Id.* (quoting Brief for Respondent at 9, *Quanta*, 128 S. Ct. 2109 (No. 06-937)) (emphasis omitted).

components. Via the combination, Quanta infringed LGE's patents, because Quanta (according to LGE) did not have LGE's permission to practice its patents. LGE sued Quanta for patent infringement. The case made its way to the U.S. Supreme Court, which addressed whether LGE's patent rights were "exhausted." Did LGE's patent claims fail to extend to Quanta's actions, by the authorized sale of Intel products to Quanta? The Court ruled that exhaustion applied and that Quanta did not infringe.

The Court reached its conclusion in two steps. First, "the Intel Products constitute[d] a material part of the patented invention and all but completely practice[d] the patent."⁴⁵ (The Court noted a subtle but crucial distinction. The Intel products used the LGE patents sufficiently that Intel was "practicing" the LGE patents, and the Intel products "substantially embodied" the LGE patents, but because the elements of the patent claims themselves were modestly broader than the Intel devices, Intel did not infringe LGE's patents.⁴⁶) Quanta did not modify the Intel products in any way. It only plugged the Intel products into other standard computer components, which it had to do in order to use the products at all.⁴⁷ Second, and critically, the terms of the license agreement between LGE and Intel did not change the presumption that sale of the Intel products to Quanta was authorized. At LGE's instruction, Intel had advised Quanta that the patent license from LGE did not extend to combinations of Intel products and non-Intel products. The Court concluded that the instruction and the advice did not explicitly qualify Intel's authority to sell products that embodied the patented invention.⁴⁸ The result is a case that strongly endorses the concept of patent exhaustion in principle, yet finds it applicable on these facts only because of the details of the agreement between the patent owner and its licensee.

2. *Vernor v. Autodesk, Inc.*

In *Vernor v. Autodesk, Inc.*,⁴⁹ Timothy Vernor purchased legitimate copies of AutoCAD, a copyrighted computer program produced by Autodesk, Inc., at a garage sale. He offered those copies for sale at the eBay auction website. Autodesk objected to the sales on the ground that every copy of AutoCAD is subject to the standard Autodesk Software License Agreement included with that copy, which grants "a 'nonexclusive, nontransferable license to use the enclosed program . . . according to the terms and conditions herein'"⁵⁰ and includes a "prohibition on rent, lease, or transfer [of] all or part of the Software, Documentation, or any rights granted hereunder to any other person without Autodesk's prior written

45. *Id.* at 2120.

46. *Id.*

47. *Id.* (relying on *United States v. Univis Lens Co.*, 316 U.S. 241 (1942)).

48. *Id.* at 2121–22 (distinguishing *Gen. Talking Pictures Corp. v. W. Elec.*, 304 U.S. 175, *aff'd on reh'g*, 305 U.S. 124 (1938)).

49. 555 F. Supp. 2d 1164 (W.D. Wash. 2008).

50. *Id.* at 1166.

consent.”⁵¹ It was undisputed that the original transferee of Vernor’s copies had agreed to the license. Vernor asked the trial court, the U.S. District Court for the Western District of Washington, to declare that he was lawfully entitled to resell his copies of AutoCAD under copyright’s “first sale” doctrine, which permits the sale of a lawfully acquired copy of a copyrighted work by the “owner” of that copy.⁵² The court had to decide whether Vernor was an “owner” within the meaning of copyright law, or whether he stood in the shoes of the original transferee and was merely a licensee under the terms of AutoCAD’s software license.

The court concluded that the original AutoCAD transactions were sales, not licenses, because in substance, if not in form, the transferee was intended and allowed to retain permanent possession of its copies of the program.⁵³ Retention of possession was inconsistent with a license, in the court’s view. The court denied AutoCAD’s motion to dismiss the case and its alternative motion for summary judgment.

3. *MDY Industries, LLC v. Blizzard Entertainment, Inc.*

Blizzard Entertainment, Inc. and its parent, Vivendi Games, Inc., own and operate the massively successful online computer game known as World of Warcraft, which involves game players competing against one another and advancing through various levels via the acquisition of virtual, digital assets.⁵⁴ Playing World of Warcraft requires that the player install a Blizzard computer program on a client computer that is connected to the Internet. In the process of installing that program and playing the game, the player must agree to an end user license agreement (EULA) with respect to the game software and to online terms of use with respect to the online World of Warcraft game environment. To the extent relevant to the case, the EULA provides that each player is granted only a license to install and use the game software, that players are prohibited from “intercepting, emulating, or redirecting the proprietary components of the game” and from “modifying files that are part of the game,”⁵⁵ and that players may not “mine” the game for assets.⁵⁶

In *MDY Industries, LLC v. Blizzard Entertainment, Inc.*,⁵⁷ MDY Industries, LLC, distributed a computer program called WowGlider, which may be installed on the player’s client computer as an add-on to the Blizzard software and which can be used to play World of Warcraft

51. *Id.*

52. *Id.*; see also 17 U.S.C. § 109(a) (2006).

53. See *Vernor*, 555 F. Supp. 2d at 1170–71.

54. This description significantly understates the complexity of the game environment and the game itself, neither of which have much to do with the legal or knowledge issues involved.

55. *MDY Indus., LLC v. Blizzard Entm’t, Inc.*, No. CV-06-2555-PXH-DGC, 2008 WL 2757357, at *5 (D. Ariz. July 14, 2008).

56. *Id.* at *6.

57. 2008 WL 2757357.

automatically on behalf of that player. WowGlider enables the player to acquire assets rapidly (to “mine” assets) and advance more quickly to higher levels of play than would be possible via standard human game play.

MDY asked the trial court, the U.S. District Court for the District of Arizona, to declare that distribution of its computer program did not violate Blizzard’s software copyrights. Blizzard asked the court to find that distribution of WowGlider rendered MDY liable for vicarious and contributory copyright infringement by World of Warcraft users.

The court agreed with Blizzard, giving full effect to the World of Warcraft license in almost precise proportion to the extent to which the court in *Vernor* (which the MDY court distinguished) did not. In spirit if not in letter, the court gave credit to Blizzard’s suggestion that the EULA and terms of use restrictions were needed to ensure a “fair” gaming experience for all participants. The court concluded that the agreed restrictions on mining the game for assets constituted part of the limitations on the license granted by Blizzard.⁵⁸ When purchasers of WowGlider used that program to play World of Warcraft, they failed to comply with a condition of the license. Use of WowGlider in itself did not infringe Blizzard’s copyright in the World of Warcraft game client, but when players failed to comply with a condition of authority to use the client program, they infringed Blizzard’s copyrights in that program.⁵⁹ The court granted Blizzard’s motion for summary judgment against MDY with respect to Blizzard’s copyright infringement claims.⁶⁰

4. *Jacobsen v. Katzer*

Robert Jacobsen owns the copyright in a computer program called DecoderPro, part of a software project called the Java Model Railroad Interface (JMRI) that supports model railroading with programs that allow model railroaders to control trains and model railroad switches. DecoderPro was distributed on the Internet via the “Artistic License,” a version of an open source license that expressly authorizes others to copy, modify, and redistribute the program code, including its source code version, but that conditions such authorization on compliance with various requirements having to do with attribution of the code to its original authors and making any modifications publicly available, among other things. Matthew Katzer and his company, Kamind Associates, Inc., incorporated some of the DecoderPro software in their competing product but failed to comply with all of the terms of the Artistic License. Jacobsen sued Katzer for copyright infringement.

58. *Id.* at *5–6.

59. *Id.* at *6.

60. Following a later bench trial, the court entered judgment against MDY not only on Blizzard’s copyright infringement claims but also on related tort claims and claims under the Digital Millennium Copyright Act. *See MDY Indus., LLC v. Blizzard Entm’t, Inc.*, No. CV-06-2555-PHX-DGC, 2009 WL 223631 (D. Ariz. Jan. 28, 2009).

The question before the trial court in the case, the U.S. District Court for the Northern District of California, was whether the terms of the Artistic License offered a basis for copyright liability or only supported possible claims for breach of contract—the difference being the remedy to which Jacobsen would be entitled. A successful copyright claim likely would support an injunction against Katzer. A successful contract claim likely would support only a claim for money damages. The trial court ruled that Jacobsen was entitled to relief in contract, not in copyright, and it denied Jacobsen’s request for a preliminary injunction.⁶¹

In *Jacobsen v. Katzer*,⁶² the U.S. Court of Appeals for the Federal Circuit, disagreeing with the district court, vacated that ruling and concluded that Jacobsen’s claims sounded in copyright.⁶³ It reasoned partly that the language of the license suggested the presence of a condition rather than a covenant, partly that any copyright owner (Jacobsen, here) retains the exclusive right to authorize modification and distribution of the work by others, and primarily that the conditional nature of the license was necessary to further the collaborative structure and the goals of the underlying open source software development project, the JMRI.⁶⁴ The JMRI project, like any open source project, involves collaboration among a number of loosely affiliated programmers and users. Formally, both Jacobsen and the court could have easily located an enforceable contract governing those users, by formatting the Artistic License in a way that deemed use of the DecoderPro license to constitute acceptance of the license.⁶⁵ But a contractual damages remedy would be insufficient to compel ongoing cooperation with the development project, because a damages remedy might not induce a change in behavior by a noncompliant user of the software. And since many open source programs are distributed for free, no damages for breach would be available in the first place.⁶⁶

5. *UMG Recordings, Inc. v. Augusto*

UMG Recordings, Inc., a music recording and distribution company, distributed “promotional CDs” containing copyrighted music in various

61. See *Jacobsen v. Katzer*, No. C 06-01905 JSW, 2007 WL 2358628 (N.D. Cal. Aug. 17, 2007), vacated 535 F.3d 1373 (Fed. Cir. 2008).

62. 535 F.3d 1373.

63. *Id.* at 1381–82.

64. *Id.*

65. See McGowan, *supra* note 32, at 245 (semiseriously characterizing open source licenses as property-esque covenants that run with the code); Margaret Jane Radin & R. Polk Wagner, *The Myth of Private Ordering: Rediscovering Legal Realism in Cyberspace*, 73 CHI.-KENT L. REV. 1295, 1312–13 (1998) (similarly describing running covenants, but in contractual terms).

66. On remand from the court of appeals, Jacobsen renewed his request for a preliminary injunction on both contract and copyright grounds. Again, the district court denied Jacobsen’s motion, this time on the ground that he had produced insufficient evidence of harm. See *Jacobsen v. Katzer*, 89 U.S.P.Q.2d (BNA) 1441 (N.D. Cal. 2009).

advertising and promotional contexts. Those CDs were labeled with notices generally in the following form:

This CD is the property of the record company and is licensed to the intended recipient for personal use only. Acceptance of this CD shall constitute an agreement to comply with the terms of the license. Resale or transfer of possession is not allowed and may be punishable under federal and state laws.⁶⁷

Troy Augusto bought these promotional CDs at record stores and through online auctions, then he sought to resell them through eBay. UMG sued him for copyright infringement. Augusto claimed a defense under copyright's first sale doctrine. The trial court, the U.S. District Court for the Central District of California agreed with him.

In *UMG Recordings, Inc. v. Augusto*,⁶⁸ as in *Vernor*, the question was whether Augusto was an "owner" of the CDs for statutory purposes. Here, the court answered that question by analyzing the formal issue of title as between UMG and the initial recipients of the CDs.⁶⁹ The only notice asserting that these transactions constituted licenses was on the CDs themselves. UMG claimed that "acceptance" of the CD somehow constituted assent to that notice and that the parties were bound to an agreement. The court disagreed. It noted that it should focus on the "economic realities" of the transaction in determining whether title passed to the CD recipients.⁷⁰ The court concluded that UMG did not intend that the recipients of the CDs would return them, and that the recipients did not expect to return them.⁷¹ The court in *Augusto* went further than the court did in a similar situation in *Vernor*, pointing out that the recipients had no ongoing duties to UMG and that UMG would derive no ongoing benefit from the recipients' use of the CDs (other than benefiting from the allegedly anticompetitive impact of enforcing the restrictive notice).⁷² The court noted that music, unlike computer programs, is not customarily licensed by its distributors and does not ordinarily need to be reproduced in order to be enjoyed.⁷³ In other words, consumer enjoyment of music does not usually trip one of copyright's infringement wires, so there was no reason to interpret the restrictive notice as allocating title inconsistently with that usual expectation.

67. *UMG Recordings, Inc. v. Augusto*, 558 F. Supp. 2d 1055, 1058 (C.D. Cal. 2008); *cf. supra* notes 33–39 and accompanying text (describing the long history of restrictive notices on music and video media).

68. 558 F. Supp. 2d 1055.

69. *Id.* at 1059.

70. *Id.* at 1060.

71. *Id.* at 1061.

72. *Id.*

73. *Id.* at 1060–62.

6. *Asset Marketing Systems, Inc. v. Gagnon*

As an independent contractor, Kevin Gagnon developed and delivered code for several custom computer programs for Asset Marketing Systems, Inc. (AMS) under a series of express contracts governing the scope and term of Gagnon's work and his compensation. As to proprietary rights in the computer programs, the parties exchanged draft agreements but never signed a final version. After AMS terminated Gagnon's services, he demanded that AMS cease using the programs and return the code to him. When AMS refused, Gagnon sued AMS for copyright infringement.

In *Asset Marketing Systems, Inc. v. Gagnon*,⁷⁴ the U.S. Court of Appeals for the Ninth Circuit affirmed the U.S. District Court for the Southern District of California's grant of summary judgment in favor of AMS and concluded that Gagnon granted AMS an irrevocable, unlimited, nonexclusive implied license to use the computer programs that Gagnon created.⁷⁵ Applying the standard for implied licensing it set out in *Effects Associates, Inc. v. Cohen*,⁷⁶ the Ninth Circuit concluded that the programs were created at AMS's request and were delivered to AMS without restriction or limitation. The court also noted that, in other respects, Gagnon's conduct, considered "objectively," manifested an intent to grant an implied license to AMS.⁷⁷ The court did not pause to wonder whether AMS was the beneficiary of a transfer of ownership in the programs. In that case, the first sale doctrine would not apply (first sale operates as a defense to certain claims of copyright infringement), but parallel reasoning might suggest that the parties did not intend that AMS's ordinary continuing use of the programs would have any copyright law implications.⁷⁸

* * *

The analytic value of these landmarks lies primarily in helping me get my bearings. In Part III, I extend and generalize what they might tell us about a geography of knowledge, and specifically what they might tell us about the characteristics of knowledge that help us to understand its legitimacy and authority: what is licensed and what can be; what cannot be licensed and why not; and the spaces at the borders and in between these domains, where we not only do not know all the answers but also have only begun to ask the questions. In the Conclusion, I draw some broader

74. 542 F.3d 748 (9th Cir. 2008).

75. *Id.* at 757.

76. 908 F.2d 555 (9th Cir. 1990).

77. *Asset Marketing*, 542 F.3d at 756–57.

78. The difference, if there is one, is entirely formal. Use of the computer program involves "reproducing" the program in a technical sense. It may or may not involve "reproduction" in a legally significant sense, though most courts have agreed that it does. Ordinary use of a book or a vinyl record album does not involve reproduction of any kind.

conclusions about the relationships among knowledge, legitimacy, and authority and about where a geography might take us.

III. THE BLANK SPACES ON THE MAP

The fact that these cases signify landmarks does not necessarily tell us what those landmarks are, what they mean, or where they are situated in a prospective geography of knowledge. To a practicing lawyer, they are landmarks of a very ordinary sort. They have right and wrong results. They use rules and make rulings that are and are not consistent with precedent, with each other, with custom and commercial practice, and/or with common sense. In specific doctrinal and policy senses, do they come to right and good outcomes?

Quanta is right, I think, to endorse a strong principle of patent exhaustion. But the Supreme Court's analysis reflects the almost insuperable challenge of maintaining a consistent distinction between rights in objects that embody patented inventions and rights in the intangible invention itself. Maintaining that distinction is a major goal of the exhaustion doctrine and an important part of the conceptual foundation of patent law. Yet commercial practice and common sense demand the conclusion, also endorsed by *Quanta*, that contract law can still take a sale of a patented item out of the domain of exhaustion.

Vernor and *Augusto* come to the right results and *MDY* does not in their treatments of formal limitations on consumer interests in products distributed to consumers and end-users. But all three cases stand on some shaky reasoning in that they locate the idea of a "sale" of an item in contested understandings of what a "sale" means in social context. Social context cannot be irrelevant to the meaning of a commercial transaction; making a legal sale stand solely on the formality of title or solely on the intent of the seller or licensor would undermine vast swaths of consumer protection law and would run contrary to much commercial law.

Jacobsen and *Asset Marketing* are largely correct, given current copyright doctrine and standard understandings of copyright policy. A collective commons of the sort that open source licenses enable cannot be effectively managed via interlocking contracts. The copyright owner's intent should be given major weight in constructing the character of a commercial transaction.

That lightning quick review of the cases suggests that there are no sharp or easy lines to draw here. My sense of the correctness and incorrectness of the different cases depends on situating myself somewhat hesitantly in the geography of knowledge that forms the balance of this essay. Even doctrinally, conflict and contradiction in the cases is apparent immediately. Intellectual property interests can be licensed via contracts (*Quanta*), but similar licenses can be enforced as property rights instead (*Jacobsen*). The intent of the owner of the legal right is sometimes determinative of the meaning of a transaction involving that right (*Asset Marketing*), but sometimes the understanding of those on the receiving end controls, rather

than the belief of those on the giving or selling end (*Vernor, Augusto*). Elsewhere, I suggest that some difficulties here could be resolved via greater reliance on the idea of salience of relevant claims, interests, and remedies, especially at the time of transacting, but that framework is necessarily general.⁷⁹ Here, the right answer may be that law and policy should live with some unresolved tensions.⁸⁰

The more interesting and useful landmarks here are not doctrinal or practical. They are conceptual. What these cases suggest is the vast heterogeneity of the knowledge landscape as such, and the heterogeneity of the mechanisms by which law recognizes the value of knowledge. The point of the landmarks is that the legal system recognizes knowledge simultaneously in objects and in practices. Copyrights, patents, copyrightable “works of authorship,” books, computer programs, ideas, patents, and patentable inventions are all examples of knowledge objects. Objects overlap in various ways with knowledge practices and institutions, including, though hardly limited to, law. Objects come in many different forms, and both law and other cultural practices allow us to combine those forms, to divide them, and to represent a single form in multiple objects. Knowledge may arise in origins and sources, but it may be understood only or largely by the practices of recipients, interpreters, and users. Knowledge practices and institutions include conventions of using, transferring, storing, sharing, and consuming objects. They include markets, custom, tradition, and innovation, among other ways of doing things. Copyright and patent law are two of these. Licenses and sales are two more, as are scientific research, university technology transfer, novels, and films. There are knowledge collectives and knowledge-producing and knowledge-consuming individuals, some of whom make knowledge their business (professional software developers such as Gagnon and intermediaries such as Vernor, Augusto, and Intel) and some of whom are knowledge hobbyists, such as the model railroading programmers in *Jacobsen* and the game players in *MDY*.

It is possible to imagine a geography of knowledge that does not feature objects and institutions or practices prominently, but it is difficult. Bearing that caution in mind, where the landmarks leave off and the borderlands begin has much to do with when and how knowledge objects are created and recognized (or changed, otherwise manipulated, or ignored outright); when and how various knowledge institutions and practices emerge, are formalized and sanctioned, evolve and disappear; and how examining those broad sets of questions leads to and follows from questions about overlaps and intersections between them. The existence of copyright and patent law and the existence of licensing practices teach us that these are jurisprudential questions as well as questions of cultural theory and

79. See Madison, *The Software License*, *supra* note 15, at 338–39; Michael J. Madison, *Rights of Access and the Shape of the Internet*, 44 B.C. L. REV. 433, 485–91 (2003).

80. See Madison, *supra* note 1, at 159–74 (suggesting that institutional complexity in intellectual property law may be normatively attractive).

philosophy. Object and institution do not mesh mechanically or on their own. The legal system creates them, recognizes them, and validates them, connecting legitimate knowledge and legitimate law.⁸¹ These connections form knowledge maps, which, like other kinds of maps, may fold up neatly but which may also fold back on themselves, sometimes in unpredictable ways.⁸²

One way to take off from these landmarks and to make sense of the rest of the knowledge cases is to systematize the issues they raise in a set of dichotomies about law and knowledge: contract and property interests; hierarchical and distributed social forms; open and closed systems; static and dynamic welfare; expert and amateur skill; culture and commerce; and individual and social agency. To the extent that any of these approaches purports to offer a comprehensive understanding of knowledge issues, it is probably mistaken. Each of these things inhabit overlapping spaces, in constant tension with one another.

Moreover, how legitimate law relates to legitimate knowledge is often clearly marked and purposive, but it need not be. Behind law's representations of legitimate and authoritative knowledge lie intuitions, arguments, and beliefs regarding the *value* of knowledge and its objects and its institutions and its practices. The Supreme Court in *Quanta* makes and relies on a statement about the value of patent exhaustion (that it is a good and broad doctrine). The courts in *Vernor* and *Augusto* make and rely on statements about the value of consumer expectations (that they need to be protected, even in copyright law). The court in *Jacobsen* makes and relies on a statement about open source software communities (that they can create valuable products). Propositions about the law of knowledge connect in a variety of ways to various value-laden dimensions of knowledge.

In geographic terms, core borderlands questions involve what is knowledge, what is the authority by which knowledge comes to be recognized as legitimate and by which knowledge exercises authority through law, and the why, where, and when of each of those questions, and in answering those questions, dichotomies will not do particularly well. To focus on one specific example, what is the relationship between the knowledge community that is an open source computer software development project, and the knowledge artifacts that are the program itself (a dynamic, evolving thing) and the instrument that is the open source software license (typically, a fixed, static thing)? What is the relationship between that combined enterprise and a similarly constructed but individually controlled and managed enterprise that produces and supports a

81. See Madison, *Things*, *supra* note 15.

82. Cf. ANTHONY GIDDENS, *THE CONSTITUTION OF SOCIETY: OUTLINE OF THE THEORY OF STRUCTURATION* 162 (1984) (describing structuration, the constitution of human society, as a recursive relationship between human agents and constructed social practices). The geographic metaphor has its limits, among them the presumption that the scope of the geography is limited. The metaphoric associations of a *cosmology* of knowledge are more open-ended, but that metaphor is not otherwise particularly evocative.

conventional proprietary, closed-source computer program that competes with the open source version? How does that proprietary program construct differ from the open source construct? Does it matter if the open source version is based on the proprietary version, or the reverse, in some technological sense, or if some individual programmers have somehow participated in both? And why and when should law, society, or public policy care?⁸³ It is tempting to suppose that I might literally draw a map to serve as a guide to these questions, but instead, and without focusing exhaustively or exclusively on this particular set of questions, I explore several related open-ended and intentionally incommensurate borderlands issues. These are keyed mostly to the cases highlighted in Part II, and they suggest that more exploration is needed before a map is possible, if it is ever possible.

A. *Borderlands*

1. Formalism

Consistent with my interest in forms of legal practice, I start with intellectual structure and modes of formal legal reasoning. Most lawyers, most courts, and many legal scholars examine knowledge licensing in one or more conventional modes of analysis. The legitimacy and authority of knowledge depends on it being encoded in forms that the law or other cultural practice has come to recognize. Licensing typically begins with an existing patent or copyright. The right-owner grants permission to use that right to some other party (a user, consumer, manufacturing partner, and so on). The validity and effect of the license begin with questions about the scope of the intellectual property interest (typically represented as a species of property right, to be controlled by the property owner within the limits provided by the relevant statute) and end with questions about the scope of the license grant. Licensing exists precisely at intersections among the forms of things in the world and the formal analysis of language.

One of these intersections is contract law, because most licenses of intellectual property rights are bound up with reciprocal promises to pay royalties or other fees. Was a valid agreement formed? What did each party promise to do? What is the consequence of nonperformance? License agreements, which depend on each party's assent, may be distinguished formally from restrictive notices, which do not. Because a contract right is authoritative only between the parties but a property right is good against the world, as the legal saying goes, society may be less suspicious of the former than the latter. So long as some assent-based mechanism is in place to ensure that all affected parties "agree" to the restriction, then the law treats the license as presumptively legitimate. In

83. On the cultural dimensions of these questions, see CHRISTOPHER M. KELTY, *TWO BITS: THE CULTURAL SIGNIFICANCE OF FREE SOFTWARE* (2008).

the absence of assent, it is not. That distinction places an obvious burden on legitimate assent mechanisms.⁸⁴

Such restrictive notices may be problematic in contract terms, but the same forms may be less troublesome if they are located at a second intersection, property. Once a property right is given, then the fact that the owner chooses to dispose of all of it or part of it, is likely viewed as presumptively acceptable. The trouble with property arises with the premise. When is the property right legitimately given, and what is the scope of the right? Because of their potential breadth, property rights are harder to come by and usually arise in forms specified by statute or through long acceptance in the common law.⁸⁵ Copyrights and patents are themselves evidence of the power of property forms and how the law uses them to construct legitimate and authoritative knowledge objects.

In the licensing context, at times, as in *Jacobsen*, the distinction between interpreting the legal form as a property right or as a contract right is significant, primarily because the different characterizations lead to different remedial outcomes. (At times, the two remedies are cumulative rather than alternative. The doctrine of preemption in federal law embodies the idea that federal intellectual property rights take precedence over contract and related state law rights in the event that they overlap.) In *Augusto*, the court began with a formal inquiry into transfer of title between the CD producer and the initial CD acquirer. In *Quanta*, the outcome of the case turned on the phrasing of the contract between LGE and Intel. In *Asset Marketing*, the parties had a series of complicated dealings with one another that they never managed to record fully in a standard legal form. But form it must be; the court shoehorned the arrangement into an alternative.

The power of form can be overstated. Ambiguities in the authority of formalism in knowledge law mirror ambiguities in the authority of formalism in knowledge itself. Tangible knowledge objects come in recognized forms: the book; the photograph; the CD. The authority of the “original” copy may differ from the authority of reproductions.⁸⁶ Knowledge practices and institutions come in recognized forms: the firm; the university; the newspaper; the encyclopedia. All of these forms can be manipulated in various ways (lawyers and nonlawyers alike know this all too well), and knowledge frequently fails to come in or fails to yield easily to standard formal packages. If a book is not published as paper and binding, is it still a book? Perhaps, but the presence or absence of form alone is not enough to justify an answer. Both the doctrine of exhaustion in

84. See Madison, *supra* note 79, at 447–64, 494–96.

85. See Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000) (explaining the limited forms of common-law property estates by analogy to the *numerus clausus* principle of the civil law).

86. See Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction*, reprinted in ILLUMINATIONS 217 (Hannah Arendt ed., Harry Zohn trans., 1968), on the authority of photographs and enhanced anxiety over originality in an era of cheap and exact reproductions.

patent law and the doctrine of first sale in copyright law depend on transfers of ownership, but “ownership” is neither defined in the relevant law nor readily susceptible to formal definition.⁸⁷ For licenses, if a knowledge producer can manage to create a contract with every other party in the world, or if “assent” is treated too formally by courts and lawyers rather than as an inquiry into meaningful agreement, then the contract right is tantamount to a property claim. Textual arguments become arguments about objects themselves.

The deeper problem is that *why* form should be authoritative, either in law or in knowledge objects and practice, is often left unclear. Form might be authoritative because people know about the form, perhaps can see the form, and can experience the form. Or, form might be authoritative for reasons unrelated to direct experience. Formalism might derive from other social structures or social needs, such as history, tradition, and custom, or social welfare claims, such as economic efficiency. A patent can be authoritative whether or not consumers or users of a patented device can see evidence of a patent claim or evidence of its inventiveness. Giving notice of the patent claim by marking the object with a patent number enhances the patent owner’s rights against would-be infringers. But why should the patent itself assume and exercise such powerful properties? What should the law do with a license that claims control of a knowledge object in the absence of a relevant copyright or patent?

In that context, consider the possibility that form alone could determine what is a “knowledge object,” to which special rules might apply, and what is an ordinary object, subject to different rules.⁸⁸ Fuji and Kodak manufacture “single use” or “one time use” cameras. A remanufacturer collects the housings from “used” cameras, fills them with film, and sells the “single use” cameras for second uses. Can Fuji or Kodak legitimately stop the remanufacturer’s activity? Formal doctrine suggests that, if the original cameras are covered by a patent, then the remanufacturer is acting legally if it is “repairing” the cameras but illegally if it is making “new” cameras.⁸⁹ The camera itself exercises the authority of the patent. A camera is a kind of knowledge object, in the sense that it encodes various forms of knowledge. If the original cameras are not covered by a patent, then the remanufacturer can act as it pleases. It makes no difference whether the camera itself is labeled “single use camera” or is marked with a “single use only” legend or license. The underlying logic and purpose of patent law control.

87. See 17 U.S.C. § 117 (2006) (granting the “owner” of a copy of a computer program certain rights to use that program).

88. See JONATHAN ZITTRAIN, *THE FUTURE OF THE INTERNET—AND HOW TO STOP IT* 101 (2008) (describing the legal complexities of so-called “tethered” goods, or goods whose utility is inextricably linked to the utility of the platforms for which they are designed).

89. See *Jazz Photo Corp. v. Int’l Trade Comm’n*, 264 F.3d 1094 (Fed. Cir. 2001) (reversing judgment of patent infringement against remanufacturers of single-use film cameras).

Suppose instead that there is no patent, yet the camera is clearly and loudly packaged as a “One Time Use Camera” and the camera itself bears a notice that says, “Licensed for Single Use Only.” The form of the knowledge (the nature of the object) appears to be unambiguous to the user, but the underlying logic and purpose of patents, which governed previously, are absent. Courts that follow formal reasoning (and I suspect that most courts would in this example) ignore a distinction between repair and reconstruction and would permit a remanufacturer to collect, refill, and resell the housings.⁹⁰

Generalizing this example, the question is the weight to be given to the presence of the patent itself, as opposed to the form of the underlying knowledge object, or the form of something else (legal, tangible, or conceptual), or some other consideration entirely. Consider property servitudes, the idea that a particular object carries with it a necessary and obligatory duty to use it in a certain way or not to use it in a certain way, so long as the recipient has notice of the limitation. Such restrictions are common in the law of real property. They are infrequent in the law of personal property, such as tangible objects (chattels). Their treatment in the intangible knowledge context is complex. Knowledge licenses restrict the use of knowledge objects and therefore get analogized to servitudes.⁹¹ *Augusto* presented a kind of servitude in the “no resale” restriction on a CD. The court there focused on the physical object and found that the servitude could not be enforced. An open source license, as in *Jacobsen*, presents a kind of servitude in placing a condition on use of the computer program. The court there focused on the intangible right and found that the servitude could be enforced. As Zechariah Chafee noted, copyright and patent law are themselves types of servitudes, because they impose mandatory limits on what you can do with certain knowledge objects.⁹² Without being quite explicit on the matter, Chafee appeared to focus on the copyright-as-servitude as attached neither to the physical object nor to the copyright, but rather to the intangible “work of authorship” that is embodied in the

90. Cameras are merely examples. Comparable uncertainties regarding legitimacy and authority can be worked out for books (does copyright’s first sale doctrine apply to digital e-books?), encyclopedias (should courts take judicial notice of the contents of Wikipedia entries?), newspapers (are the authors of blogs entitled to privileges arising under the First Amendment?), and even the firm (what are the liabilities of contributors to an open source collective for harms caused by the collective’s products?). Answering each of these questions by relying on formal distinctions (an e-book is not a book; Wikipedia is not an encyclopedia; a blog is not a newspaper; an open source project is not a corporation) is plausible, but unsatisfying and incomplete.

91. For leading examples of this line of analysis, see generally Thomas M. S. Hemnes, *Restraints on Alienation, Equitable Servitudes, and the Feudal Nature of Computer Software Licensing*, 71 DENV. U. L. REV. 577 (1994); Glen O. Robinson, *Personal Property Servitudes*, 71 U. CHI. L. REV. 1449 (2004); Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885 (2008).

92. See Zechariah Chafee, Jr., *Equitable Servitudes on Chattels*, 41 HARV. L. REV. 945, 967–68 (1928).

object.⁹³ Other intellectual property law permits that kind of control only if the servitude is part of a voluntary arrangement. Trade secrets and other legally recognized “ideas” can be controlled legally in the context of an agreement or a confidential relationship that is voluntarily assumed.⁹⁴ If I buy a bottle of Coca-Cola, I have every legal right to try to unlock the secrets of its formula. If I am a filmmaker and I receive an unsolicited idea submission in the mail that is marked “confidential,” I can make that film without fear of liability, in the absence of some undertaking to protect its confidentiality. But private or unpublished knowledge can be controlled unilaterally by the producer or creator, without any prior commitment on the part of a recipient. This material is not “property” in the first place.⁹⁵

The form of the servitude itself, in other words, does not offer much help in deciding whether the limitation is valid, entitled to legitimacy and authority validated by the legal system. If knowledge licenses are common, and they are, does the frequency of the form itself grant them legitimacy and authority? Or does the skeptical formalist argument take precedence? Are servitudes that expand the legitimate scope of copyrights and patents invalid? Do servitudes that narrow them remain valid?⁹⁶ Or is the distinction between servitude text and physical object an increasingly artificial one? If so, then the formal authority of knowledge depends on other forms of authority,⁹⁷ which might be itself form-based or formal (and then it is turtles all the way down, as Bertrand Russell might have said),⁹⁸ or which might be something else.

2. Functionalism

The point is not that formalism is dead or irrelevant. The point is that the territory occupied by formalism is also inhabited by other things. The limits of formalism characteristically give way to one of the many flavors of functionalism. Functionalist reasoning comes in many different forms,

93. Cf. Wendy J. Gordon, *Intellectual Property as Price Discrimination: Implications for Contract*, 73 CHI.-KENT L. REV. 1367 (1998) (describing servitudes in copyright as allowing price discrimination on the “thing”—the chattel). It may be more accurate to say that the servitude runs with the intangible legal object that the law calls a “work of authorship” or, in patent law, an “invention.” On the development of the concept of the “work of authorship” in the nineteenth century as the locus of copyright analysis, see Oren Bracha, *The Ideology of Authorship Revisited: Authors, Markets, and Liberal Values in Early American Copyright*, 118 YALE L.J. 186 (2008).

94. Related cases impose liability for misappropriation of trade secrets by “improper means.” See *E. I. duPont deNemours & Co. v. Christopher*, 431 F.2d 1012 (5th Cir. 1970) (notoriously imposing liability for trade secret misappropriation on a photographer who flew over the plaintiff’s construction site in order to learn secrets of its manufacturing process). Still, even in those cases, there should be some salient, contextual notice to the would-be appropriator that the conduct is improper.

95. See Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193 (1890). Wendy Gordon made this point to me.

96. See Van Houweling, *supra* note 91.

97. See Robinson, *supra* note 91.

98. The attribution of the phrase to Bertrand Russell comes from STEPHEN J. HAWKING, *A BRIEF HISTORY OF TIME 1* (1988).

from utilitarian consequentialist reasoning to forms of economic analysis that focus on allocative issues, to distributive justice arguments, to “economic realism,” to arguments based on social conventions and other patterns of social and cultural practice.⁹⁹ *Jacobsen* suggests that open source software licenses should be enforced in a certain way because doing so enhances the success of the open source project, which is a project worth promoting. *MDY* suggests that Blizzard’s EULA and terms of use should be enforced because enforcement maintains the fair competitive environment that all World of Warcraft users expect. *Augusto* declares that reselling promotional CDs is lawful in part because music is not usually licensed to consumers. *Vernor* declares the recipient of the software package is an “owner” in part because the parties expect that the program will never be returned to the producer.

Reliance on the knowledge producer’s intent substitutes a type of purpose-based reasoning for form,¹⁰⁰ as do appeals to transaction-cost reduction or to the overarching goals of the law. “Balance” arguments in knowledge cases are the quintessential vessels of functionalism. Copyright law was rewritten in 1976 largely to reframe the protection of creative things in terms of function (copyright now attaches automatically to “original works of authorship fixed in any tangible medium of expression”¹⁰¹) rather than in terms of form (the 1909 statute permitted protection of books, periodicals, lectures, photographs, and so on¹⁰²). Purposive arguments in the law have counterparts elsewhere in knowledge contexts. Books, music, or genetic sequences are recognized as such because of their roles in social or cultural settings, or because of their explanatory power in scientific or historical contexts. How to think about the Internet and related policy arguments (What to do about social media? About YouTube? About net neutrality?) is a question that is almost always posed in functional terms.

One limit of functionalism generally is that the value of any particular functionalist account depends largely on the merit of assumptions that the functionalist argument itself cannot justify. Should society conceptualize knowledge questions in utilitarian terms? In distributive justice terms? Certainly, if we agree that utilitarianism or some measure of distributive justice is the right baseline. But functionalism alone cannot justify that answer. How to manage the weight of functionalist accounts of authority and how to blend them with other arguments can only be resolved pragmatically on a case-by-case basis.

99. See Cohen, *supra* note 13.

100. See Mark D. Janis, *A Tale of the Apocryphal Axe: Repair, Reconstruction, and the Implied License in Intellectual Property Law*, 58 MD. L. REV. 423 (1999) (arguing that the related doctrines of patent exhaustion and implied license can be reconciled by focusing on the intent of the patentee/seller/licensor).

101. 17 U.S.C. § 102(a) (2006).

102. Copyright Act of 1909, ch. 320, 35 Stat. 1075 (1909) (codified in scattered sections of 17 U.S.C.).

If formalism described one borderland of knowledge and authority, functionalism occupies part of that territory and expands into a related but distinct conceptual space. The legitimacy issue here is not simply the insufficiency of functionalism on its own terms, but the inability to fully articulate function at all. We can articulate function in terms of form (copyright law and patent law are meant to promote the progress of science and the useful arts), but that is an obvious circularity. How do we assess the authority of a knowledge argument that addresses a form or practice that has no known definable value, or whose purpose can be defined and defended in some cases but not in all, or whose function is incompletely known? From a functionalist perspective, how do we identify and assess the limits of our knowledge?

Functionalist accounts of the Internet and its networked relatives, such as “social production,” to borrow Yochai Benkler’s phrase,¹⁰³ have this partly circular, partly endlessly open character. The Internet is a form of knowledge, a knowledge practice (and/or collection of many practices), and a knowledge tool (and/or many tools). What is it good for? How does the network function as a knowledge enterprise? Both of the following statements are true: Because of its speed, its breadth, and its depth, its potential for good appears to be almost limitless; we have only begun to understand its benefits. Because of its speed, its breadth, and its depth, its potential for harm is almost equally limitless; we have only begun to see manifestations of its real costs. In specific cases and contexts, those claims can be measured; value identified; harms assessed and mitigated or eliminated. There is no overarching functional way to approach the authority of the network or the network of networks as such. The best accounts, though still incomplete, rely on the “emergent” properties of complex systems.¹⁰⁴ To the extent that we believe that we have found it, the explanation may turn out to be incomplete, or even wrong. Lior Strahilevitz argues that the virtues of social production diminish as production capacity is reallocated.¹⁰⁵ The wealth of networks, or one form (or collection of forms) of knowledge authority and legitimacy, depends on the wealth of people and of other institutions, which need their own sources of authority.

Consider patenting of genetic sequences and regulation of genetically modified (GM) agricultural products. In the United States, genes (or at least definable genetic sequences) can be patented, and GM foods are presently unregulated in the United States so long as the genetic

103. See BENKLER, *supra* note 2, at 117.

104. Susan Crawford, *Shortness of Vision: Regulatory Ambition in the Digital Age*, 74 *FORDHAM L. REV.* 695 (2005).

105. See Lior Jacob Strahilevitz, *Wealth Without Markets?*, 116 *YALE L.J.* 1472 (2007) (reviewing BENKLER, *supra* note 2) (questioning the implicit economics of Benkler’s *Wealth of Networks* on the ground that social production assumes excess productive capacity to begin with). Yochai Benkler himself recognizes that social production as such carries little normative weight, which is why he devotes so much of his book to the argument that social production is consistent with a theory of justice. See BENKLER, *supra* note 2, *passim*.

engineering involved produces foods that are not tangibly different from foods produced using traditional breeding techniques. The authority of the patent system and the regulatory position of the FDA are based on a functional understanding of the authority of the underlying science. That functional authority is the so-called “Central Dogma” of molecular biology—that each gene carries information needed to construct one protein. If the science is functionally incomplete, however, because a gene cannot be linked uniquely to a useful outcome, then the regulatory structure fails with it.¹⁰⁶ Functionalism is not simply a technique for sanding the rough edges of formalism so that we can update and apply old arguments in new settings. Functionalism exposes the limits of knowledge itself.

3. Materiality

That conclusion carries with it an intentional ambiguity of a different sort. To what extent do functional arguments, grounded in how the world works, assume understanding of concepts, and to what extent do they assume the operation of material forms? Functionalism exposes a borderland occupied by concept and mechanics, but it also suggests how intellectual structure connects to material structure. The authority of licensed knowledge forms called servitudes is based partly on formal distinctions among common, unproblematic servitudes on land; problematic licenses that govern tangible objects; questionable licenses that govern intangible knowledge-based “works” and “inventions”; and common, unproblematic licenses that govern intangible intellectual property rights themselves. Their authority is distinctly but equally based on the tangibility of the knowledge object. The authority and legitimacy of knowledge and of knowledge licenses depends on the materiality of knowledge objects. Can you touch them; see or feel their edges; and share or hoard them? The physicality of the object enhances the legitimacy of the knowledge object, and reinforces its unlicensable, indivisible identity. For knowledge purposes, the integrity and authority of the book itself is paradigmatic. Shakespeare would not be “Shakespeare,” the forebear of Western literature, without the *First Folio* that collected his works and consolidated the author’s identity with the literature that he produced.¹⁰⁷ Books can be sold and given away but, it is commonly assumed, cannot be licensed.¹⁰⁸

The authority of materiality presents some problems that are familiar to intellectual property lawyers. Intellectual property rights touch and encode knowledge at three levels of authority and legitimacy at once: the legal interest that we call the copyright or the patent; the intangible “work of

106. See Denise Caruso, *A Challenge to Gene Theory, a Tougher Look at Biotech*, N.Y. TIMES, July 1, 2007, at 3. I owe this point to Katherine Van Tassel.

107. See, e.g., David Lloyd Kreeger, In re Shakespeare: *The Authorship of Shakespeare on Trial: Preface*, 37 AM. U. L. REV. 609 (1988) (summarizing a mock trial on the question of the identity of the author of the contents of the First Folio).

108. See *Bobbs-Merrill Co. v. Straus*, 210 U.S. 339 (1908) (rejecting effort by copyright owner to enforce resale restriction printed in a copyrighted book).

authorship” that is copyrighted and the “invention” that is patented; and the physical thing that encodes the work of authorship (the “copy” in copyright jargon) or the invention.¹⁰⁹ Even within the legal system, lawyers and judges frequently confuse or fail to distinguish among them. The landmark licensing cases above maintain those distinctions only in a fragile sense. *Augusto* and *Vernor* treat the CD and the copy of the computer program themselves as the relevant knowledge objects. *MDY* and *Asset Marketing* give greatest weight to the legally constructed thing, the creative work of authorship owned by Blizzard or produced and sold by Gagnon. *Quanta* deals with the twilight that exists between a license that clearly dealt in LGE’s patent rights themselves, and the tangible object produced by Intel that somehow “embodied” the patented invention.

Partly, there are historical ambiguities at work. Copyright, for example, once treated the “copy” or “copie” as its object, the physical manuscript that was the author’s original product. Over time, the author’s product was dematerialized. Now the physical “copy” is excluded from the scope of copyright and the intangible “work” or “work of authorship” is regarded as the fruit of the author’s creative labors. The authority of the copyright itself, therefore, inheres in something other than the material form of the product. It is indisputably enhanced, however, when the copyright maps closely to a comprehensible physical form. Partly, there are cognitive and administrative challenges. A copyright in a novel covers the full text of the book, but it may also extend separately to its plot or even to a particular character. It is not always easy for readers or for courts to identify what is copyrighted and what is not, or what is legally encoded knowledge and what is not. Patent law solves this problem, at least formally, by demanding that inventors specify their inventions in written claims. Partly, there is deliberate manipulation of the lines. Licenses for computer programs are often written so as to assert copyright claims to the copy of the program itself, rather than to the work of authorship that exists independently of the copy. Given these tangles and tensions, ordinary consumers, users, and readers (not to mention new authors, inventors, judges, and lawyers) should all be forgiven for our inability to process the metaphysics of what is intangible “work of authorship” and what is tangible “copy” in a knowledge form that is, by definition, composed of electrons.

We have a variety of tools at hand to deal with these questions, but those tools are necessarily adequate only up to a point. The law works aggressively to identify legal objects that substitute metaphorically for material things. “Expression” in copyright is isolated from “idea”; “ideas” themselves are segregated and given a special status that does not quite correspond to colloquial, free speech, or literary understandings of the concept. Patent law mandates that an invention be isolated in a “claim,” which gives the inventor’s product a legal existence that is related to but may be quite distinct from what the inventor in fact concocted. To

109. See Madison, *The Software License*, *supra* note 15, at 279–80.

construct authoritative material structures around knowledge, we may turn to the physical settings in which we encounter knowledge objects (homes, schools, libraries, companies); the tools that we use to access and enjoy knowledge (computers, television monitors); and the conceptual apparatus that we supply (our prior experiences and learning, embodied in high school diplomas and college degrees).

Searching the territory for arguments from formalism and function can help us sort these further. Metaphor and experience are powerful mediators when we are trying to decide whether something “is” a book or a library, or whether something “is” an idea.¹¹⁰ We come against the limits of our usual capabilities, however, where and when the tangible and the intangible appear to be literally and metaphorically inextricable. On the one hand, that combination gives a knowledge object an especially powerful form of authority. A gene or genetic sequence usually falls into this category. A patented gene is an authoritatively powerful form of knowledge, both technically and legally. There is no negotiating with or avoiding a thing that works exactly as designed to control the storage, distribution, or use of knowledge, and that cannot be tinkered with or “hacked” to achieve some different result.¹¹¹ The most powerful versions of these combinations are invisible to consumers and users, in the sense that their knowledge forms are essentially taken for granted and unchallengeable. On the other hand, to the extent that some interest in extracting, recombining, or otherwise engaging with that knowledge is identified, figuring out a legitimate point of access for doing that is a genuine puzzle. The most notorious of these things are seeds that employ Monsanto’s patented “Terminator” technology. Seeds that incorporate the Terminator gene produce harvestable crops, but seeds saved from those crops are sterile. Farmers cannot save seeds, which would be a traditionally legitimate method of using seed-based knowledge, but instead must return to buy another load of seeds for a next generation crop.

Some recent patent cases illustrate the problem in more subtle ways. In *Schering Corp. v. Geneva Pharmaceuticals*,¹¹² Schering obtained a patent on the antihistamine loratidine (known popularly as Claritin), and later obtained a patent on a metabolite of loratidine (DCL), a chemical compound formed in the human body when it processes loratidine.¹¹³ When Schering’s patent on loratidine expired, Geneva sought to market a generic version of the drug.¹¹⁴ Schering sued, alleging that Geneva was liable indirectly for infringement of the DCL patent by patients who

110. See George H. Taylor & Michael J. Madison, *Metaphor, Objects, and Commodities*, 54 CLEV. ST. L. REV. 141 (2006) (initiating an account of information governance that relies explicitly, in part, on metaphor).

111. On technological affordances and prescriptions in the intellectual property context, see TARLETON GILLESPIE, *WIRED SHUT: COPYRIGHT AND THE SHAPE OF DIGITAL CULTURE* (2007).

112. 339 F.3d 1373 (Fed. Cir. 2003).

113. *Id.* at 1375.

114. *Id.* at 1376.

ingested the generic loratidine and formed DCL in their stomachs.¹¹⁵ The U.S. Court of Appeals for the Federal Circuit concluded that Schering's DCL patent was invalid because the claims to DCL were anticipated by Schering's loratidine patent by virtue of the doctrine of inherency.¹¹⁶ In lay terms, the DCL metabolite was necessarily covered by the earlier loratidine patent, even though it was not described in the loratidine patent, because human use of Claritin necessarily involves producing DCL. The authoritative knowledge content of loratidine, a knowledge object, was deemed to include something that loratidine does not and could not include as a technological matter.

A converse situation arose in *SmithKline Beecham Corp. v. Apotex Corp.*,¹¹⁷ another pharmaceutical case. SmithKline Beecham patented the compound in the antidepressant drug known as Paxil. SmithKline Beecham sued Apotex Corp., which intended to market a generic version of the drug, arguing that Apotex's generic version would infringe SmithKline Beecham's patent. The problem arose because the manufacturing process used by Apotex, which produced a product that would not infringe, necessarily produced tiny amounts of a byproduct compound that would infringe. On the facts of the case, it appeared that for reasons relating to the chemistry at issue, even a good faith effort to avoid infringing the patent could not succeed; the byproduct would necessarily and naturally be created. The court invalidated SmithKline Beecham's patent on public use grounds, which are not relevant to the discussion here.¹¹⁸ More interesting was the concurrence, which argued that the patent failed the subject matter threshold for patentability because the patent did not disclose a discrete, invented thing.¹¹⁹ Instead, the claim embraced a compound that was created naturally as a result of a chemical process. The authority of the knowledge object (the patent) in this case should have a considerably narrower scope than its material embodiment would otherwise suggest (had SmithKline Beecham claimed patent protection of narrower scope, focusing only on the manufactured version of the compound, it would have been on safe ground). The point, to be clear, is that the legitimacy of material authority is suspect when lines between the material object and the knowledge object—the patent, the license, the other representation of knowledge—cannot be readily disaggregated. Even when we have analytic tools that allow us to do that, at times the material world does not accommodate them, at least not readily.

115. *Id.* at 1375–76.

116. *Id.* at 1382.

117. 365 F.3d 1306 (Fed. Cir. 2004), *vacated, reh'g granted, reh'g en banc denied*, 403 F.3d 1328 (Fed. Cir.), *aff'd*, 403 F.3d 1331 (Fed. Cir. 2005), *cert. denied*, 547 U.S. 1218 (2006).

118. *Id.* at 1316–20.

119. *Id.* at 1321 (Gajarsa, J., concurring).

4. Baselines

The geography described partly by the authority of form, function, and materiality depends in part on its intersection with yet other authorities. Among them is what might be called the legitimacy of baselines, which takes on several different casts. Distinguishing the legal form we call a license from the cultural form we call the knowledge object—a book, a CD, an LP, a computer program—requires some method for identifying what counts as a “book” or knowledge object in the first place, and for recognizing that, in some sense, the category can both evolve over time yet remain recognizably the same. The baseline itself exercises a form of legitimate authority. If something is a book, then certain legal, social, and cultural rights, interests, and consequences follow. What are the baseline rights and interests in that context?

Copyright law’s “new use” cases raise this question in different technological settings. A copyright owner licenses the work of authorship for use in some format. Technology and practice evolve, and the licensee claims that a new use, such as a videocassette version of a motion picture, is covered by a license grant that authorizes an old use. Courts inevitably and necessarily resolve these debates by relying on assumptions about baselines, assumptions about the default shapes of both the knowledge objects (the “motion picture,” the “book”) and the exclusive rights that accompany those forms.¹²⁰

The landmark that looms largest over this territory is *Bobbs-Merrill Co. v. Straus*,¹²¹ the venerable Supreme Court opinion widely regarded as the first modern case on copyright’s first sale doctrine. The Supreme Court examined a restrictive “license” printed in the frontispiece of a novel that recited: “The price of this book at retail is One Dollar net. No dealer is licensed to sell it at a less price, and a sale at a less price will be treated as an infringement of the copyright.”¹²² The restriction was held to be unenforceable, because the copyright owner’s statutory right to control sales of the book (to “vend” the book, as the statute provided at the time) did not extend to control of resales of the book. The Court concluded,

To add to the right of exclusive sale the authority to control all future retail sales, by a notice that such sales must be made at a fixed sum, would give a right not included in the terms of the statute, and, in our view, extend its operation, by construction, beyond its meaning, when interpreted with a view to ascertaining the legislative intent in its enactment.¹²³

120. See *Boosey & Hawkes Music Publishers, Ltd. v. Walt Disney Co.*, 145 F.3d 481 (2d Cir. 1998) (concluding that a license to use a musical composition in “one motion picture” included use of the work in a motion picture distributed in video format).

121. 210 U.S. 339 (1908).

122. *Id.* at 341.

123. *Id.* at 351.

While stated by the Court as a conclusion, the quotation merely restates the issue. It is the nature of copyright in books, the Court essentially says, that renders the “license” restriction illegitimate. It is possible to reconstruct that conclusion in functional terms (the “license” is inconsistent with various purposes of copyright law), but that justification founders ultimately on the limits of functionality as authority. Neither *Bobbs-Merrill* nor the first sale principle for which it stands is illegitimate, but the limits of the authority of the case—grounded as it is on the presumed scope of the authority of the nature of the book itself—must be acknowledged. As above, note again the overlapping character of the borderland issues. Textual arguments again become arguments about objects, but in a very different way.

In *Augusto* (involving music media), *Vernor* (involving computer programs), and *MDY* (involving videogames and related programs), ownership is the baseline. Could the court locate an owner? If so (and how could the court do that?), what followed from ownership? The courts in *Augusto* and *Vernor* located an owner. The court in *MDY* did not. The point here is not that each court was correct or that the decisions were uncontroversial. The point is solely that the authority of the relevant license depends on authority grounded in the relevant conceptual and material starting points. Equivalent baseline questions emerge from considering what knowledge can be or is covered by intellectual property rights, and what lies in the public domain.

Baselines connected to books and board games are, for the most part, fairly uncontested. Videogame baselines are not. So, players of *World of Warcraft*, like readers of fantasy literature and players of board games, may expect that they are “entitled” to modify the play of the game as they see fit in the privacy of their bedrooms, dorm rooms, family rooms, or offices. In some meaningful sense, artificially speeding up the play of the game is no different than agreeing with fellow Monopoly players to contribute “fines” to a pot in the center of the board, to be collected by the next player who lands on “Free Parking.” That regime is common in Monopoly, but it does not appear in the printed rules that accompany the game. It may be no different than playing a copyrighted Nintendo video game using an add-on Game Genie device that is not authorized by Nintendo.¹²⁴ In *MDY*, the competitive baseline was different, prohibiting modification of the rules, partly because the players agreed to an EULA and terms of use that said that it was (note a formalist argument); partly because the nature of a massive multiplayer online game appeared to prohibit the kind of small-scale coordination that makes the Monopoly modification possible (note the functionalist argument); partly because the game platform and its application intersected technically in a specific way designed by Blizzard (note the materialist argument); and partly because the *World of Warcraft*

124. See *Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc.*, 964 F.2d 965 (9th Cir. 1992) (concluding that use of the Game Genie device, which changed the player’s experience of copyrighted video games distributed by Nintendo, did not infringe Nintendo’s copyrights).

software and service were encumbered by copyrights that are broader in scope than the copyrights that apply to Nintendo's videogame system or to the Monopoly board game. The baseline is different. Blizzard's copyrights simply reached farther in the first place.

Having identified some of the dimensions of the borderlands here, it is possible to start to bushwhack our way out of them. For example, it is possible to imagine a state of affairs where the court might simply declare in a videogame case, as the Supreme Court did in *Bobbs-Merrill* (and as district courts did in *Vernor* and *Augusto*), that the copyright simply does not extend that far in the first place.¹²⁵ But why? What attributes of a massive multiplayer online game support one baseline rather than any other? The question of licenses-as-servitudes suffers from the same flaw. Servitudes on certain chattels may be justified, and licenses-as-servitudes on computer programs in particular may be justified, because objects suffused with intellectual property rights are simply different. Chafee, for instance, initially was not persuaded that chattels were so different from land in the first place that different rules regarding servitudes were appropriate, but he did make clear that chattels supported by intellectual property rights constituted a valid class of servitude-encumbered things.¹²⁶ Society has declared by statute that producers need intellectual property rights as incentives to produce and distribute these things, and licenses are appropriate accompaniments to the initial grant of rights. Even if that equation does not add up in the case of tangible chattels, it might add up with regard to computer programs, whose reproducibility makes them especially susceptible to appropriation and as to which licenses seem especially justifiable. Is the relevant baseline the world of land, where servitudes have long been accepted; ordinary chattels, where they have not been; or "intellectual property chattels," where the analogy to land might be

125. See *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 703–05 (Fed. Cir. 1992) (upholding enforcement of "one-time use" license restriction that accompanied sale of patented medical devices); *Softman Prods. Co. v. Adobe Sys., Inc.*, 171 F. Supp. 2d 1075 (C.D. Cal. 2001) (rejecting software manufacturer's attempt to enforce "educational use" restriction that accompanied transactions in copyrighted software); *Adobe Sys. Inc. v. One Stop Micro, Inc.*, 84 F. Supp. 2d 1086, 1093 (N.D. Cal. 2000) (enforcing "educational use" terms in a software case). Compare *United States v. Unis Lens Co.*, 316 U.S. 241, 251 (1942) (invoking the doctrine of patent exhaustion on the ground that the defendant improperly proposed to extend its patent monopoly), with *Gen. Talking Pictures Corp. v. W. Elec.*, 304 U.S. 175, *aff'd on reh'g*, 305 U.S. 124 (1938) (affirming judgment of patent infringement against purchaser who failed to acquire permission to exploit the patented invention when it acquired patented devices from a licensee). These are all in part baseline cases.

126. See Chafee, *supra* note 92, at 967–68. Zechariah Chafee considers land to be the baseline. He later argues that the complex marketing organization of a standardized article is roughly comparable to organizing and managing a restricted neighborhood, both in its function and in its legitimacy. *Id.* at 986. The terminal point is disposition of the article in the hands of the ultimate consumer. The restriction could be enforced against wholesalers and retailers and other intermediaries, but not against what today we call end-users.

stronger, or where the question is simply *sui generis*?¹²⁷ How, precisely, should we frame the questions?

5. Rhetoric

Our discomfort with allocating baseline status to knowledge forms and practices that do not fit neatly with existing categories and understandings is partly conceptual and partly material, but it is also partly rhetorical. This is the borderlands of talking about knowledge, and the related problem of talking about the law of knowledge.

The very idea of a baseline invokes metaphoric associations that are only partly useful in conversations about knowledge. “Baseline” suggests that we have to start somewhere, when in fact it is equally plausible that understanding knowledge means understanding how to engage in a process or flow that has been underway for centuries. The question of ownership that pervades the licensing cases follows rhetorically from the assumption that copyright begins as a form of propertized knowledge. But as the notes above make clear, the concept of ownership eventually runs aground on the limitations of the conceptual and material justifications that it appears to rely on. We are left at times with ownership and its associated vocabulary as rhetorical tools in themselves, without stable referents in material objects or social practices. I do not mean to suggest that words dictate how we think or behave. Form, function, materiality, and assumptions about the world—among other things—offer related and at times compelling justifications through law for both belief and action. Instead, the point is that language, thought, and behavior reinforce and redirect one another as actions, speech, and experience intersect. Cognitive linguists and their intellectual cousins in philosophy identify a multidimensional hinge for much of this: metaphor.¹²⁸ The authority and legitimacy of knowledge forms and practices in law coexists in a reciprocal relationship with how we frame and experience conversations about them. Earlier, I suggested that the authority of language in law depends in part on the legitimacy of knowledge objects. Here, the point is that the reverse may be true as well. The legitimacy of knowledge objects depends in part on the authority of language in law.

In contemporary knowledge contexts, this relationship appears most commonly in connection with the question of knowledge as property. Copyright and patent are said to be species of property law, and statutory rights are analogized to common-law property rights to exclude and to exploit. At several levels, the analogy is said to be highly imperfect. Infringement of copyright and patent rights, and their ethical cousin, plagiarism, are said to be tantamount to “theft” or “stealing” of ideas and

127. See Robinson, *supra* note 91, at 1523 (“The question pertinent to property servitudes is simply where to set the baseline on entitlements.”).

128. See generally Taylor & Madison, *supra* note 110.

knowledge,¹²⁹ but the economically minded (the functionalists in the group) remind us that knowledge goods are “public goods” and therefore lack the rivalrousness of ordinary tangible property.¹³⁰ Because of substantial differences in the harm inflicted, infringement of intangible knowledge rights does not equal theft of tangible things. Control over one’s own knowledge is analogized to mythical Blackstonian dominion over an estate in land. It is pointed out that the Blackstonian model was not as absolute as we imagine, and modern property rights are so full of limitations and exceptions that it scarcely makes sense to speak of property as “property” any longer, if it ever did.

The to-and-fro continues theoretically. Legal rights in knowledge are offered as solutions to a tragedy of the knowledge commons, by analogy to the classic metaphor positing that land-based property rights respond to a tragedy of the physical commons—the overgrazing that may result if too many people have undifferentiated access to a shared resource. If all sheep owners allow their sheep to graze on the common but no one owns divisible rights in the common, then the common will be overgrazed, and no one will have a suitable incentive to improve it. The commons metaphor may be entirely inapt in the knowledge context. Or the tragedy of the commons may be an overused metaphor for property rights in general. We might start instead, as I suggested above, with the premise that the absence of legal or social constraints on knowledge is the appropriate baseline, and that some kind of justice-based, unfair competition scheme might intrude but only at the margins. We might argue that the entirety of the knowledge enterprise is constructed by human society out of a wide variety of material and rhetorical resources, neither starting nor stopping at any particular point, and that the object and subject of knowledge is to enable human flourishing not only by enabling the productive exploitation of resources, but also by minimizing or even eliminating the harm that exploitation causes. The point of an open source license, as the court recognized in *Jacobsen*, is to preserve the continuity of the knowledge construct. Creative Commons licenses try to do something similar. Their point is to use the very tools of copyright doctrine, on which Creative Commons licenses depend, to minimize the economic and cultural harm that copyright can cause.¹³¹

The borderland here is that the legitimacy of the functions being exercised by knowledge objects (copyrights and patents, intellectual property licenses, software programs, knowledge collectives) depends in part on the authority of the rhetorical resources deployed to support them. Some advocates exalt expanding the “public domain” defined by copyright and patent law, but we do not know what the world of knowledge would

129. See Jessica Litman, *Sharing and Stealing*, 27 HASTINGS COMM. & ENT. L.J. 1 (2004) (distinguishing the rhetoric of stealing from the issues created by peer-to-peer file sharing).

130. See Lemley, *supra* note 4.

131. See Lydia Pallas Loren, *Building a Reliable Semicommons of Creative Works: Enforcement of Creative Commons Licenses and Limited Abandonment of Copyright*, 14 GEO. MASON L. REV. 271 (2007).

look like or even sound like if the intellectual property and phenomenal baselines were changed, and if the conceptual and rhetorical categories that we have inherited were reorganized.¹³² Consider Google, whose interests and potential liabilities are the subjects of a growing literature and whose status as an authoritative and legitimate knowledge producer and collector is contested, to say the least. We might characterize Google as the governor of a kind of new public-private “commons,”¹³³ or as a new “intermediary” to be analogized to older intermediaries, such as publishers,¹³⁴ or as a species of “search,” a *sui generis* conceptual and legal category.¹³⁵ We do not really know, in other words, precisely what copyright and patent categories contribute to our understanding of what things count as knowledge and what things do not.

Throughout this essay I have unified a number of different legal forms, arguments, and themes under a common heading that I label “licensing,” but it would be plausible to differentiate them and analyze them as distinct categories. At one level, this essay calls for a deeper, contextual, and nuanced effort to understand that differentiation, its sources, and its implications. Yet I unify them, too, because legal and cultural practice has tried to do so. Open source licenses, restrictive notices, and Creative Commons forms are referred to as *licenses* in both technical and common usage precisely because the imprimatur of the *license* label lends the form a presumptive legal and cultural legitimacy and authority. In large part, this authority comes from the rhetoric and metaphor of knowledge as property, which brings with it tragedy and commons, exclusion and incentives. To a related but lesser degree, this stems from the rhetoric and metaphor of knowledge as contract, or knowledge as bargain, which brings with it reciprocity and exchange and the proposition that knowledge is good largely when it is good for *something*.

When knowledge takes a different rhetorical or metaphorical turn, so that the proverbial commons is a source of opportunity rather than a source of threat, or when the rhetoric or metaphor exhausts itself, as it may when we lack the ability to describe what knowledge is good for, the legitimacy and authority of the related conversation itself is called into doubt. Language itself may lack the persuasiveness that comes with the immediacy of experience. Note the reference here to form, to materiality, and to baselines. It makes little conventional sense to speak of “licensing” books, because we have no common experience of restrictions on books. Yet a

132. The “public domain” itself is only just now being explored as a conceptual and rhetorical category. See Samuelson, *supra* note 16.

133. See Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, *Constructing Commons in the Cultural Environment*, 95 CORNELL L. REV. (forthcoming 2010).

134. See James Grimmelmann, *The Structure of Search Engine Law*, 93 IOWA L. REV. 1 (2007).

135. See, e.g., Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149 (2008) (arguing that search law is indeed a meaningful and significant cultural and legal category).

Creative Commons license may be applied as readily to a book as to a website. Can a book be licensed? If so, by whom, and when?

If property rights arise to create value lost from the failure to control knowledge, but some licenses serve to minimize the harm caused by controlling knowledge, then we encounter an apparent paradox. Is the license an exercise of a property interest at all?¹³⁶ It appears to have all the attributes of a formal license; it appears to be a form of “property” right. (What’s more, under *Jacobsen*, that open source property right is enforceable via an injunction, which economists call a form of “property” entitlement.)¹³⁷ But it neither depends on the rhetorical foundation of property nor solves a property-like problem. The conundrum is both rhetorical and functional. The point of the legal device is not to overcome a “tragic” problem of overconsumption and underproduction, but instead to manage the conservation of knowledge resources. The license means not to enable growth and prosperity via controls on knowledge, but instead to control the harmful effects of those controls. In that case, is the authority of the knowledge form based on the rhetoric of property? Carol Rose recently hinted that the answer might be no.¹³⁸ We might disregard the rhetoric and focus on the authority of function and form, but I pointed out earlier that those tactics run into borderlands of their own. If conserving a knowledge commons is a default mode for conceptualizing and privatization the exception, or if privatization serves the interests of knowledge commons, can a single rhetoric of property adequately serve both modern and traditional knowledge concepts? Perhaps not.

Recall my example of the “single-use” camera. One might ask how a camera differs from a book. The response likely would be that the question makes little sense. Yet that is precisely my claim. Our rhetorical and metaphorical frames predispose us to deem the question largely but not entirely implausible. Any given conversation about knowledge, even a conversation that frames the question in terms of geography, as I have done here, exhausts itself rhetorically at the point where we acquire and experience knowledge in forms and contexts that are literally unprecedented. What happens when words fail us?

B. Further Explorations

Belaboring the territorial metaphor at this point, having just critiqued its own rhetorical foundations, runs obvious risks. I conclude this part with highly abbreviated comments pointing to some further borderlands to be explored.

136. Cf. Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998) (describing the consequences of a superabundance of property interests in a single transactional domain).

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

138. See Carol M. Rose, *Big Roads, Big Rights: Varieties of Public Infrastructure and Their Impact on Environmental Resources*, 50 ARIZ. L. REV. 409 (2008).

1. Intermediaries

My initial description of borderlands supposed that their conceptual and material contents are distinct from the identities of the parties whose interests are at stake. But party and interest may overlap; identity and border intersect. If licenses bridge competing conceptions of knowledge, then borderlands partly represent problems of intermediaries, rather than problems of production, distribution, consumption, and so forth. What happens when individuals, firms, enterprises, and knowledge forms are simultaneously and necessarily both intermediaries and end points? Their authority and legitimacy varies depending on their role. Every one of the landmark licensing cases discussed in this essay presents some version of a knowledge intermediary at the same time that each of them simultaneously presents some version of a knowledge producer and consumer. How should we conceive of multiple levels or types of legitimacy and authority simultaneously?

2. Custom and Convention

The licensing cases above reflect and offer society's two minds about the respective roles of individual and society in knowledge practices. On the one hand, the rhetoric and much of the doctrines of copyright and patent law exalt the innovative and creative individual, without whom society would not be supplied with new knowledge. There is no doubt that at one level, knowledge is embodied in the individual mind, and at a deep level its authority and legitimacy ultimately rest there and in the intentionality of the source. *Asset Marketing* and implied licensing doctrine rely heavily on that proposition. One ought not stop there. Once we focus on the individual, we expose important questions of training, expertise, and professionalism, and questions of expert and amateur authority.¹³⁹ On the other hand, virtually all knowledge is embodied in some institutional or material setting—firm, university, or household, for example—and knowledge practices are inevitably situated temporally amid lifetimes or generations of institutional presence.¹⁴⁰

This essay is situated in conventions of knowledge production and distribution that are inescapably social. The proposition that there is such a thing as a geography of knowledge puts the cultural cart before the individual horse, in a manner of speaking. Intellectual property debates are increasingly flavored by arguments over the role of social convention and custom, which might precede and inform legal practice, which might follow

139. See, e.g., Dan Hunter & F. Gregory Lastowka, *Amateur-to-Amateur*, 46 WM. & MARY L. REV. 951 (2004) (celebrating the antihierarchy in knowledge production and distribution).

140. See Dan L. Burk, *Intellectual Property and the Firm*, 71 U. CHI. L. REV. 3 (2004) (examining the knowledge functions of the firm in transaction-cost terms); 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.

and be informed by legal practice, and/or which might serve as a proxy for social welfare to be maximized by law and public policy (if that's the functional guideline at stake).¹⁴¹ Licensing is a knowledge practice that speaks to and reflects a broad variety of social structures.

3. Space

Space is the final frontier after all.¹⁴² Where knowledge comes from, where knowledge resides, and where knowledge goes are questions that are cumulative of each other, of course, not alternatives, and the answers depend both literally and metaphorically on how we understand knowledge to relate to its environmental and social context. In a real sense, all of the borderlands described in this essay converge on this point, literally as well as metaphorically. At the most basic, material level, knowledge may be deeply associated with specific places, even specific buildings. Libraries are paradigm examples. Think of the Library of Congress, the Bodleian at Oxford University, the original Library of Alexandria, and even Jorge Luis Borges' fictional Library of Babel. Knowledge is created and shared in classrooms and laboratories, in courtrooms and studios.

What counts as a "place" is both physical and conceptual, and our sense of the authority of knowledge is often linked partly to its physicality and partly to the conceptual structures that we have come to associate with that physicality. What I described above as forms, functions, materiality, baselines, and rhetorics come into play in building and sustaining these relationships. Consider scientific research. Scientific research produced by a team of academic researchers may have a different character than comparable scientific research produced by a commercial research and development lab, partly because we associate each with different (but related) locations, different (but related) communities of researchers, different (but related) expectations as to purpose and impact, and so on.¹⁴³ One is presumptively open, distributed, independent, and unbiased; the other is consolidated, centralized, and presumptively interested. When these things are netted out, by historical standards, patents grounded in corporate research tend to be presumptively legitimate in cultural terms. The commercial world is part of the intellectual property system, in a sense that is metaphorically spatial as well as simply conceptual. Universities are not. Patents grounded in university research are suspect.

141. For contrasting views on the welfare benefits of social conventions and customs, compare Michael J. Madison, *A Pattern-Oriented Approach to Fair Use*, 45 WM. & MARY L. REV. 1525 (2004) (arguing that patterned social activity is likely to produce creative output), with Jennifer E. Rothman, *The Questionable Use of Custom in Intellectual Property*, 93 VA. L. REV. 1899 (2007) (expressing skepticism about incorporating customary uses into intellectual property law).

142. Sorry. Otherwise, never mind.

143. Katherine Strandburg's contribution to this Symposium explores this issue. See Katherine J. Strandburg, *User Innovator Community Norms: At the Boundary Between Academic and Industry Research*, 77 FORDHAM L. REV. 2237 (2009).

Those standards are changing, in part because the material and conceptual conventions of place and space as bases for knowledge change as they connect to and overlap with contests over centralization and distribution, markets and competition, and baseline expectations. In many places around the world (led by Stanford University, in the Silicon Valley, and by Harvard University and the Massachusetts Institute of Technology, in Cambridge), the spatial integration of the university community and the surrounding commercial research community means that historical contrasts between open university science and closed commercial science are becoming less stark. Patenting by university researchers becomes more acceptable as universities themselves look and act less like nurturers of open inquiry and more like hubs of downstream knowledge exploitation. University research has not lost its legitimacy and authority, but its forms of legitimacy and authority connect to the intellectual property system in new, distinct ways. Patents generated by university researchers are not necessarily suspect.¹⁴⁴

CONCLUSION: THE STAKES OF GEOGRAPHY AND THE ROADS AHEAD

Questions about intellectual property law and policy, and questions about different modes of intellectual property protection and different social forms of innovation, represent a subset of questions about the nature of knowledge itself. Answering the first set of questions does not require answering the second, and answering the second does not necessarily entail answering the first. But there is a natural and provocative relationship between the two that deserves exploration, principally because it can help us understand the limits of understanding both of them. Intellectual property law and policy are difficult and challenging in their own right, but it turns out that the difficulty and challenge is not due merely to ambiguities and conflicts that are internal to the structures of those fields. There is something broader at work, and exploring some broader themes in knowledge itself helps us to see what that is. Our anxiety about the mechanics of knowledge law is grounded in anxiety about the nature of knowledge itself. A close examination of even a small sample of recent American court opinions suggests some of the key dimensions of that anxiety.

This essay is framed as a geography because the exploratory metaphor associated with space seems to suit the topic. Lawyers and scholars in intellectual property domains often underestimate the complexity of the

144. Patent and copyright law illustrate but do not exhaust a geography of knowledge defined by connections between legitimacy in knowledge and legitimacy in law. Research conducted by or under the auspices of corporate sponsors may be culturally suspect for other reasons or in other contexts. The Supreme Court recently declined to give weight to research on the predictability of punitive damages awards, on the ground that the research was funded in part by Exxon. *See Exxon Shipping Co. v. Baker*, 128 S. Ct. 2605, 2626 n. 17 (2008).

epistemological terrain on which they tread.¹⁴⁵ Philosophers of knowledge and social scientists studying knowledge questions may fail to appreciate how their interests intersect with some very concrete yet surprisingly complex topics in law and policy (or, they may appreciate the intersection but knowingly decide that investigating it is not important or relevant). The intersection between the two worlds is a contested space. Not only do law and policy domains illuminate centuries-old epistemological questions, but a complex epistemological terrain lies beneath law and policy questions themselves. There is clearly something to a methodological approach to knowledge and law that focuses on knowledge forms and practices.¹⁴⁶ Intellectual property rights and practices depend on authority and legitimacy of knowledge generally; and authority and legitimacy are manifested in day-to-day behaviors, forms, and practices, as well as in belief. The same might be said, and perhaps eventually will be said, of other questions of knowledge law and policy: free speech, privacy, telecommunications, data security, and others.

What next?

A geography of knowledge needs more landmarks and more details to flesh out the territories we know. It needs to fill in some of the empty spaces and to refine what we do not know. Some of those can come from closer and deeper examination of legal forms and legal practices. Some of those can come from closer and deeper examination of social practices¹⁴⁷ and related institutions. Some of those can come from closer and deeper examination of processes of individual knowledge processing, where innovation and creativity are situated in ourselves, and how we convert knowledge of one sort (creativity, for example) into knowledge of another sort (landmarks). Much more work can be done mapping the territorial interstices of knowledge.

The end game is partly knowledge about knowledge for its own sake. Partly, also, it is knowledge about knowledge with a purpose. By identifying and describing patterns of stability and change, of individuals

145. This statement should not be understood as a critique of any particular discipline or group of scholars. To the extent that this essay is addressed to a particular problem, it is addressed to a kind of Newtonian conceit, that there exists a reliable and knowable mechanism by which social, cultural, and economic questions can be linked to law reform answers.

146. Cf. Ronald J. Allen & Brian Leiter, *Naturalized Epistemology and The Law of Evidence: Reply to Redmayne*, 2003 MICH. ST. L. REV. 885 (defending application of naturalized epistemology to evidence law research); Ronald J. Allen & Brian Leiter, *Naturalized Epistemology and the Law of Evidence*, 87 VA. L. REV. 1491, 1537–49 (2001) (applying techniques of naturalized epistemology to specific doctrines in the law of evidence or, in lay terms, linking the empirics of evidence law to the nature of knowledge). Note that I frame the discussion in this essay in terms of social and cultural treatments of knowledge, rather than in terms of knowledge as truth.

147. See, e.g., Dotan Oliar & Christopher Sprigman, *There's No Free Lunch (Anymore): The Emergence of Intellectual Property Norms and the Transformation of Stand-Up Comedy*, 94 VA. L. REV. 1787 (2008); Katherine J. Strandburg, *Users as Innovators: Implications for Patent Doctrine*, 79 U. COLO. L. REV. 467 (2008).

and culture, of law, materials, and society, and of models and details, we can approach specific knowledge law and policy problems with a more sophisticated guide. What authority is salient, stable, and legitimate in knowledge contexts, and where does that salience, stability, and legitimacy come from? Keeping with the spatial metaphor, where does it go?