Knowledge Curation

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KNOWLEDGE CURATION

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This Article addresses conservation, preservation, and stewardship of knowledge, and laws and institutions in the cultural environment that support those things. Legal and policy questions concerning creativity and innovation usually focus on producing new knowledge and offering access to it. Equivalent attention rarely is paid to questions of old knowledge. To what extent should the law, and particularly intellectual property law, focus on the durability of information and knowledge? To what extent does the law do so already, and to what effect? This Article begins to explore those questions. Along the way, the Article takes up distinctions among different types of creativity and knowledge, from scholarship and research to commercial entertainment and so-called "User Generated Content"; distinctions among objects, works of authorship, and legal rights accompanying both; distinctions among creations built to last (sometimes called "sustained" works), creations built for speed (including "ephemeral" works), and creations barely built at all (works closely tied to the authorial "self"); and distinctions between analog and digital contexts.

INTRODUCTION

Legal and policy analyses of creativity and innovation usually focus on producing new knowledge and offering access to it.[1]

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1 *See, e.g.*, Rochelle Cooper Dreyfuss, *Does IP Need IP? Accommodating Intellectual Production Outside the Intellectual Property Paradigm*, 31 CARDOZO L. REV. 1437, 1438–39 (2010) (describing the challenges of understanding intellectual property law in contexts where intellectual production occurs despite the the absence of IP rights); Dotan Oliar & Christopher Sprigman, *There's No Free Laugh (Anymore): The Emergence of Intellectual Property Norms and the Transformation of Stand-Up Comedy*, 94 VA. L. REV.

Equivalent questions concerning existing knowledge, preserving and conserving old things and offering access to them, get less frequent attention. In this article, I describe a framework for addressing conservation, preservation, and stewardship of works in the cultural environment and legal and other institutions for doing those things. This is sometimes characterized as the problem of cultural heritage, a phrase that tends to focus attention on particular objects, or (at other times) as the problem of intergenerational equity, a phrase that evokes people more than knowledge itself. I refer to it as the challenge of knowledge curation.

Creativity and innovation in their several forms are species of knowledge. They are ways of knowing, experiencing, and interacting with the social and physical world. Intellectual property (IP) law is the default starting point for discussions of the legal regulation of knowledge that touch all actors in society. It is appropriate, therefore, to consider the extent to which knowledge curation is an IP law problem. Do preservation, conservation, and stewardship of knowledge present intellectual property law questions? They do, in the sense that they present questions to which intellectual property law often responds, such as questions of access to knowledge, authenticity, influence, cultural and economic progress, and authorial and reputational interest. Intellectual property law therefore seems ripe for extension beyond the new, to the old. But knowledge curation also stands at some distance from standard IP models. The usual public goods model of IP is an awkward fit for curation challenges. It is far from clear that society suffers from overconsumption of existing cultural artifacts and other older forms of knowledge and insufficient investment in their preservation. Moreover, it is far from clear that these problems, if they exist, should be addressed by granting limited rights of exclusion to owners of older forms of knowledge. Conversely, one might argue that social interests in the preservation and conservation of knowledge are adequately secured by intentionally omitting that subject matter from the scope of limited copyright, patent, and trademark rights. But that case, too, is incomplete.

Those claims may be extended preliminarily, as follows. A legal framework for durable forms of knowledge is partly baked into the structure of IP law, but negatively, and to a limited degree. The public goods case for IP regimes holds that the law properly addresses questions concerning durability of the creative or innovative intangi-

1787, 1790 (2008) ("Conventional intellectual property wisdom suggests that absent formal legal protection, there will be an inadequate provision of creative works, as authors and inventors would be unlikely to recoup their cost of creation.").

ble—the "original work of authorship,"[2] the patentable "invention,"[3] the distinctive "mark" or "sign"[4]—via a framework of limited exclusive rights for creators and innovators balanced by rights of access and use reserved to the public.[5] In copyright and patent law, the primary point of the law is to encourage production and distribution of the new.[6] Creative and innovative work of this sort is preserved by law and otherwise so that it can be used and so that it can be changed, that is, adapted for new purposes, for new audiences, and so on.[7] Acceptance of durability is a byproduct of the focus on novelty. As the rights/access balance requires, rights expire, and some material is excluded from protection altogether. Fundamental forms of knowledge are preserved negatively, by exclusion, for the benefit of successive generations. Copyright law excludes ideas;[8] patent law excludes laws of nature;[9] and both doctrines exclude nonnovel and nonoriginal works. Trademark law should be considered separately, because it is less concerned with the new. Trademarks protect commercial enterprises from unfair competition and protect consumers from marketplace confusion. Still, indirectly, trademark offers a modest but nonetheless negative legal framework for conserving the identity of intangible forms of knowledge, in this case commercial symbols. Trademark

2 *See* 17 U.S.C. § 102(a) (2006) (noting that copyright subsists in "original works of authorship fixed in any tangible medium of expression").

3 *See* 35 U.S.C. § 101 (2006) ("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor . . . .").

4 *See* 15 U.S.C. § 1127 (2006) ("The term 'trademark' includes any word, name, symbol, or device, or any combination thereof [used by a person] to identify and distinguish his or her goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods, even if that source is unknown."). Foreign trademark systems often described trademarks in terms of "signs" rather than "marks." *See* Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 15, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 108 Stat. 4809, 1869 U.N.T.S. 299 [hereinafter TRIPS Agreement], *reprinted in* THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 320 (1999).

5 *See, e.g.*, Bilski v. Kappos, 130 S. Ct. 3218, 3227 (2010) (noting that tests for patentable subject matter must take care not to "obscur[e] the larger object of securing patents for valuable inventions without transgressing the public domain").

6 *See, e.g.*, Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 450 (1984) ("The purpose of copyright is to create incentives for creative effort.").

7 *See* Peter S. Menell, *Knowledge Accessibility and Preservation Policy for the Digital Age*, 44 HOUS. L. REV. 1013, 1019–39 (2007) (trying to recover a sense of preservation and access policies in copyright law, grounded in limitations, exclusions, and safe harbors).

8 *See* 17 U.S.C. § 102(b) (2006).

9 *See Bilski*, 130 S. Ct. at 3226.

doctrines require that the mark owner maintain differentiation among different but independently consistent specific commercial identities and social meanings.[10] The rights of the mark owner continue indefinitely, despite changes to the mark, so long as the mark offers consumers "the same, continuing commercial impression."[11] The point of the law is not to encourage investment in durable forms of knowledge, but to limit risks faced by trademark owners who wish to innovate with new marketing strategies.

In short, intellectual property doctrines and their justifications generally invest far more rhetorical and analytic energy on creativity and innovation than on stability and durability.[12] Preservation and conservation of older forms of knowledge are left largely, if not entirely, to the domain of tangible property law, where a rich body of law, policy, and custom has developed around the preservation of art and artifacts.[13] Importantly, copyright and patent law both require modest investments in fixed forms of new knowledge.[14] Below, I consider some the implications of those rules for knowledge curation. But fixation rules feed the production of artifacts of knowledge; curation of knowledge requires more. Related analysis of traditional knowledge (TK), traditional cultural expressions (TCEs) (also known as folklore),[15] and geographical indications (GIs)[16] as problems in the

10 *See* Int'l Order of Job's Daughters v. Lindeburg & Co., 633 F.2d 912, 919 (9th Cir. 1980) ("A trademark owner has a property right only insofar as is necessary to prevent consumer confusion as to who produced the goods and to facilitate differentiation of the trademark owner's goods.").

11 One Indus., LLC v. Jim O'Neal Distrib., Inc., 578 F.3d 1154, 1160 (9th Cir. 2009) (emphasis omitted) (quoting Brookfield Commc'ns, Inc. v. W. Coast Entm't Corp., 174 F.3d 1036, 1048 (9th Cir. 1999)).

12 *Compare* Justin Hughes, *"Recoding" Intellectual Property and Overlooked Audience Interests*, 77 TEX. L. REV. 923 (1999) (describing audience interest in fixed forms of copyrighted works), *with* Robert H. Rotstein, *Beyond Metaphor: Copyright Infringement and the Fiction of the Work*, 68 CHI.-KENT L. REV. 725 (1993) (rejecting the idea of the unmodifiable creative work).

13 *See, e.g.*, JOSEPH L. SAX, PLAYING DARTS WITH A REMBRANDT: PUBLIC AND PRIVATE RIGHTS IN CULTURAL TREASURES (1999).

14 *See* 17 U.S.C. 102(a) (2006) (noting that copyright subsists only in fixed works); 35 U.S.C. § 112 (2006) (describing the disclosure requirements imposed on patent applicants). Patent law demands only conception of an invention, not actual construction of an embodiment, but treats the filing of a valid patent application as "constructive" reduction to practice. *See* Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 60–61 (1998) (emphasizing conception); Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1376 (Fed. Cir. 1986) (describing constructive reduction to practice).

15 *See* Margaret Chon, *Global Intellectual Property Governance (Under Construction)*, 12 THEORETICAL INQUIRIES L. 349, 367 (2011). The Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) of the World Intellectual Property Organization (WIPO) has been working for

preservation of knowledge has not, in the main, been broadened to offer insight into problems of knowledge generally. TK and TCE discussions have exposed important insights into the meaning of tradition and preservation within specific communities,[17] and into the challenges of defining and governing interfaces between people, processes and knowledge inside TK, TCE, and folkloric communities, and people, processes, and knowledge outside them.

The result of this blend of approaches is a curious omission in the law of knowledge. Intangible forms of knowledge are addressed as questions of novelty and creativity; tangible forms of knowledge are addressed as questions of fixity and preservation. Folkloric and traditional knowledge are approached as problems in authenticity.[18] If "tangible/intangible" and "static/dynamic" form the ranges of a two-by-two matrix, then two boxes of that matrix have received less generalized attention from scholars than they should. Dynamism in tangible thing-ness is one such box; it is just starting to be addressed.[19] Here, I introduce a conversation regarding the second: the preservation and conservation of intangible knowledge, or knowledge curation. Could and should the law do more—more than what it does now in the context of intellectual property law—to preserve intangible forms of creativity and innovation produced by prior generations? We are missing a good affirmative account of the mechanics of curating the products

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many years on a text-based instrument (or instruments) for the effective protection of traditional knowledge, traditional cultural expressions, and genetic resources. The IGC website collects background documents, working documents, and the text of the IGC's current mandate. *See Intergovernmental Committee*, WORLD INTELL. PROP. ORG., http://www.wipo.int/tk/en/igc/ (last visited Sept. 21, 2011). James Boyle pointed out long ago that Western models of intellectual property, which focus on innovation and creativity, are poorly suited to broader source-based interests in reputation, privacy, and control represented in traditional cultural forms. *See* JAMES BOYLE, SHAMANS, SOFTWARE, AND SPLEENS: LAW AND THE CONSTRUCTION OF THE INFORMATION SOCIETY 127–28 (1996).

16 *See* Justin Hughes, *Champagne, Feta, and Bourbon: The Spirited Debate About Geographical Indications*, 58 HASTINGS L.J. 299 (2006).

17 On the complex character of claims to authenticity on behalf of communities and artistic traditions, see, for example, DANIEL BARENBOIM & EDWARD W. SAID, PARALLELS AND PARADOXES: EXPLORATIONS IN MUSIC AND SOCIETY (Ara Guzelimian ed., 2002); BENJAMIN FILENE, ROMANCING THE FOLK: PUBLIC MEMORY AND AMERICAN ROOTS MUSIC (2000); Eric Hobsbawm, *Introduction: Inventing Traditions*, *in* THE INVENTION OF TRADITION 1 (Eric Hobsbawm & Terence Ranger eds., 1983).

18 *See* Madhavi Sunder, *Cultural Dissent*, 54 STAN. L. REV. 495, 513–16 (2001).

19 *See* Michael J. Madison, *Law as Design: Objects, Concepts, and Digital Things*, 56 CASE W. RES. L. REV. 381 (2005); Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885 (2008).

of the mind. I propose to offer an introductory account of those mechanics. I ground that account in the idea of cultural commons.

Commons, as I use the term here, refers to institutional arrangements for sharing resources, grounded in law but heavily dependent on history and practice. Commons are neither essentially public nor private. Commons are neither perfectly free, open, and fluid nor necessarily static and fixed. Commons are governance, bounded by discipline but complex and pluralistic in orientation.

The article unfolds in the following way. Part I illustrates the idea of knowledge curation. Part II describes the mismatch between the three principal intellectual property regimes and knowledge curation. Part III offers a brief diversion on the question of piracy. Part IV describes cultural commons as a framework for describing curation. Part V points to continuing challenges for commons as an approach to knowledge curation.

I. WHY KNOWLEDGE CURATION MATTERS

Knowledge curation is a dialogue among interests in stability and dynamism in cultural objects and practices. The center of analysis is to-and-fro[20] rather than control, or governance rather than ownership. If production of the creative and innovative "new" constitutes the dominant "to" of IP policy, then preservation and conservation of the known "old" might be said to be the "fro." Society needs durable, fixed intangible things both because society itself needs to be largely stable and fixed, and because it also needs those durable, fixed things precisely so that it can change them, and change itself.[21] Society needs the old, and law and policy often (but not always) should promote and protect the old, in order to make sense of social interests in the new.[22] The critic Walter Benjamin referred to collecting as a "renewal of existence" and as renewal of the old world.[23] Society also needs the old in order to understand its own past, that is, to under-

20 *See* Julie E. Cohen, *Creativity and Culture in Copyright Theory*, 40 U.C. DAVIS L. REV. 1151, 1190–91 (2007) (describing the idea of "creative play").

21 *See* Amy M. Adler, *Against Moral Rights*, 97 CALIF. L. REV. 263, 270–71 (2009).

22 *Compare* Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 580–81 (1994) (noting that a parodist has to mimic the original in order to make its point), *with* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 451–52 (1984) (differentiating "librarying" from "time-shifting" when consumers use videotape recorders).

23 *See* Walter Benjamin, *Ich packe meine Bibliothek aus*, [*Unpacking My Library*], DIE LITERARISCHE WELT [THE LITERARY WORLD], July 1931 (Ger.), *translated in* 2 WALTER BENJAMIN: SELECTED WRITINGS 486, 487 (Michael W. Jennings et al. eds., Rodney Livingstone et al. trans., 1999).

stand its own history. Knowledge curation is valuable both instrumentally and in itself.

The phrase *knowledge curation* can be defined analytically,[24] but it is best illustrated by examples. The analytic claim begins with *knowledge*, which encompasses not only creative and new works but also old material, facts, and ideas, in their conversational as well as legal senses. Facts, ideas, and laws of nature are part of the law of knowledge even if they are excluded from copyright and patent protection. I focus on *knowledge* to distinguish *knowledge* as the subject of law and policy from *creativity* as an attribute of the human psyche.[25] *Knowledge* is external; it is embodied in objects and practices and may include things that are *not* innovative or creative. Its external character means that knowledge is inescapably social in character. *Creativity*, as scholars and analysts frequently use the word, refers to an attribute of the human mind.[26] That is not my interest here.

Curation deals with a cluster of concepts: preservation, collection, evaluation, and presentation of things. I choose the term over the more mundane term *management* (or the vivid but less rich term *hus-*

24 This phrase appears to have had limited traction to date in organizational science and no traction in legal scholarship.

25 My terminology here blends two arguments. In part I wish to include in this review things that are excluded from copyright and patent law on the ground that they are "ideas" or "facts," even though in a meaningful sense they are the products of human cognition. "Knowledge" in this sense embraces all manner of ways of knowing the world, including both "creativity" (that is, for example, copyrightable "expression") and "ideas," in their copyright sense, patent sense, and nonlegal sense. In part I wish to distinguish my perspective from arguments that the "creativity" of interest to law and policy is "creativity" found inside one's imagination. As the contribution by Keith Sawyer to this Symposium makes clear, "creativity" is often wrongly viewed solely as an inner state, a character trait, or an attribute of personality. Psychological research suggests that creativity lies at least as much in the making as in the thinking, that is, creativity exists at the intersection of the person and the environment. *See, e.g.*, ROBERT J. STERNBERG ET AL., THE CREATIVITY CONUNDRUM (2002); R. Keith Sawyer, *The Western Cultural Model of Creativity: Its Influence on Intellectual Property Law*, 86 NOTRE DAME L. REV. 2027 (2011).

In part I also distinguish my perspective from arguments that "knowledge" should be characterized by its contrast with mere "information," as a power or capacity rather than as an object-ified (if necessarily evolving) "thing." *See* Amy Kapczynski, Introduction, ACCESS TO KNOWLEDGE IN THE AGE OF INTELLECTUAL PROPERTY (Gaëlle Krikorian & Amy Kapczynski eds., 2010), at 46. In my view "knowledge" includes not only things but also practices, ways of knowing, and tools and capabilities.

26 Or soul. *See* ROBERTA ROSENTHAL KWALL, THE SOUL OF CREATIVITY: FORGING A MORAL RIGHTS LAW FOR THE UNITED STATES 147–53 (2010).

bandry[27]) largely because of how the word evokes interests in the semantic content of works of knowledge, or its value, rather than knowledge as an abstract *thing*.[28] Curation combines history and education. Curators are preservationists, among other things, and they are also teachers. *Knowledge curation* refers to the idea that knowledge itself, as an intangible, passes from place to place, from person to person, from group to group, and from generation to generation under a set of material conditions that can be defined and understood and that preserves the identity of that knowledge even if it is also changed, extended, or adapted. The puzzle of what lasts and why has been considered by art historians, who focus on the character of influence and reputation in the longevity of art.[29] I suggest that the puzzle is generalizable, and that it should be explored in the context of legal rules and related institutions.

Examples help. There are works and practices whose preservation now matters and has mattered deeply to modern, Western culture but whose survival owes differing amounts of debt to various intellectual property systems. The question to consider is the role of intellectual property law and the role of other law and policy choices, and other social and cultural choices, in the survival of these things in something approaching their original forms.

- Homeric poetry, which survived for generations via oral tradition before the invention of writing (as Plato, interpreting Socrates, lamented),[30] let alone the invention of intellectual property law.
- Shakespearean poetry, and particularly his plays, which were produced for performance and only recorded in published

27 *See* JOHN SEELY BROWN & PAUL DUGUID, THE SOCIAL LIFE OF INFORMATION 147 (2000) (referring the flow of knowledge in an ecological sense, among individuals, firms, networks, and communities of practice).

28 The word itself is derived from the Latin *curatore*, meaning caretaker, and in ancient Rome referred to those in charge of preserving order with respect to public works, public supplies, or public administration.

29 *See* HOWARD S. BECKER, ART WORLDS (1982) (describing the question of "what lasts?" in terms that are necessarily connected to questions of quality and judgment).

30 Plato's lament, in *Phaedrus*, is recounted in NEIL POSTMAN, TECHNOPOLY: THE SURRENDER OF CULTURE TO TECHNOLOGY 3–5 (1992). *See also* NICHOLAS CARR, THE SHALLOWS 54–56 (2010). Maryanne Wolf offers a nuanced account of Socrates's objections to writing, focusing on its impact on human development, on memory, and on personal autonomy. *See* MARYANNE WOLF, PROUST AND THE SQUID: THE STORY AND SCIENCE OF THE READING BRAIN 69–79 (2007).

form after Shakespeare's death, prior to the invention of modern copyright in 1710.[31]

- The microscope, a much-studied scientific device developed outside the imperatives of modern patenting.[32]
- Coca-Cola, both formula and brand, an example of the intersection of trade secret and trademark law and also of the influence of the commercial imperatives of a competitive market on cultural fixation.[33]
- Home-based performance of musical compositions, or the practices whose disappearance was lamented by John Philip Sousa upon the popularization of the gramophone.[34] Cultural practices as well as cultural things are at stake, and not all relevant objects of study are things that have in fact persisted. This one did not.
- The Internet Archive, a private resource that has been taking periodic "snapshots" of the World Wide Web since 1996 and storing them and making them available to the public online since that time, as well as hosting collections of digital content.[35] One collection in particular has received quite a bit of attention in the legal literature: audience recordings and

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31 *See* STEPHEN GREENBLATT, WILL IN THE WORLD: HOW SHAKESPEARE BECAME SHAKESPEARE 18 (2004). The first modern copyright statute, the Statute of Anne, dates from 1710. *See* An Act for the Encouragement of Learning, by Vesting the Copies of Printer Books in the Authors or Purchasers of Such Copies, During the Times Therein Mentioned, 1710, 8 Ann., c. 19 (Eng.) [hereinafter Statute of Anne].

32 Other scientific and technological advances might serve at least as well here. Consider such fundamental and enduring inventions as the steam engine, the airplane, the telephone, the elevator, the automobile, the Internet, the telescope, the chlorination of drinking water, penicillin, X-rays, and the polio vaccine. Invented technical standards, such as the meter and the periodic table of the elements, also offer useful illustrations. *See* Mario Biagioli, *From Print to Patents: Living on Instruments in Early Modern Europe*, 44 HIST. OF SCI. 139 (2006).

33 *See, e.g.*, Coca-Cola Co. v. Busch, 44 F. Supp. 405, 407–08 (E.D. Pa. 1942) (finding that Coca-Cola had acquired rights in the term "Coke" by virtue of public use of the term); Barton Beebe, *Intellectual Property Law and the Sumptuary Code*, 123 HARV. L. REV. 809, 824 (2010) ("[A] brand can become so ubiquitous, can exist in so many copies, that its very ubiquity is the basis of its perceived rarity—if not quite famous for being famous, the brand Coca-Cola is distinctive, if not unique, for its unrivalled ubiquity.").

34 Sousa's reaction to recording technology was made the focus of a contemporary argument about popular remixing of commercial culture in LAWRENCE LESSIG, REMIX: MAKING ART AND COMMERCE THRIVE IN THE HYBRID ECONOMY (2008) and Timothy Wu, *Copyright's Communications Policy,* 103 MICH. L. REV. 278, 298 (2004). *See* John Philip Sousa, *The Menace of Mechanical Music*, APPLETON'S MAG., Sept. 1906, at 278.

35 *See* INTERNET ARCHIVE, http://www.archive.org (last visited Sept. 21, 2011).

soundboard recordings from Grateful Dead concerts.[36] One cannot relive the experience of participating in a Grateful Dead concert, but one can hear what fans in a particular concert hall heard on one particular night.

In each of these examples, the content is of interest, not the container. In one way or another, these are forms of knowledge, rather than creativity or innovation as such.

I am conscious here that I focus on objects themselves rather than on the people who might have an interest in them, now, in the past, or in the future. With Shakespeare, we care about the First Folio, but the plays themselves are the relevant things, and the fact that they fell into the public domain relatively quickly after the production of the First Folio is little help as such in understanding their relative durability.[37] Yet the enduring character of Shakespeare's works is itself as essential to contemporary culture as the modern works constructed from them: *West Side Story*;[38] *Rosencrantz & Guildenstern Are Dead*;[39] and the performances of Sir Laurence Olivier.[40] Without modern knowledge of Homeric poetry, later authors could not have produced—nor audiences enjoyed—Virgil's *Aeneid*, Dante's *Divine Comedy*, Cervantes's *Don Quixote*, Joyce's *Ulysses*, and even the Coen brothers' *O Brother, Where Art Thou?*[41] Knowledge represented by modern art is no less significant. In the throwaway modern romantic comedy *You've Got Mail*, the protangonist (Joe Fox) reminds his love interest: "*The Godfather* is the *I Ching*. *The Godfather* is the sum of all wisdom. *The Godfather* is the answer to any question,"[42] a statement that illustrates the enduring character of an ancient classic Chinese text, the enduring character of a modern classic film, and the thesis of this Article. Access rules in modern intellectual property law enable

36 *See Grateful Dead*, INTERNET ARCHIVE, http://www.archive.org/details/GratefulDead (last visited Sept. 21, 2011). The relevant legal scholarship is Mark F. Schultz, *Fear and Norms and Rock & Roll: What Jambands Can Teach Us About Persuading People to Obey Copyright Law*, 21 BERKELEY TECH. L.J. 651 (2006).

37 I do not mean to overstate the degree to which modern scholars have been able to identify a single canonical version of any given play attributed to Shakespeare.

38 ARTHUR LAURENTS ET AL., WEST SIDE STORY (1958) (music by Leonard Bernstein and lyrics by Stephen Sondheim).

39 TOM STOPPARD, ROSENCRANTZ & GUILDENSTERN ARE DEAD (1966).

40 Sir Laurence Olivier starred in film adaptations of HAMLET (Two Cities Films 1948), HENRY V (Two Cities Films 1944), RICHARD III (London Film Productions 1955), and AS YOU LIKE IT (Inter-Allied Film Producers Ltd. 1936). He also appeared on stage in London and New York in numerous productions of The Bard's works. *See* TERRY COLEMAN, OLIVIER (2005).

41 O BROTHER, WHERE ART THOU? (Touchstone Pictures 2000).

42 YOU'VE GOT MAIL (Warner Bros. Pictures 1998).

the producers of *You've Got Mail* to use references to the *I Ching* and *The Godfather*, but curation requires preservation and evaluation as well as access. Society, or at least some populations in society, need and want the *I Ching* and *The Godfather* to be curated. Over time and as a result of kinds of curation, both works were elevated to the roles that they played in *You've Got Mail*, in a bit of none-too-cute Hollywood self-reference.

II. Intellectual Property and Curation Markets

Intellectual property law is the standard model for understanding how social interests in knowledge are translated into law.[43] That model privatizes knowledge interests as IP rights in order to form financial and labor markets in them; in principle, encouraging the exchange and transfer of those rights in private transactions promotes social welfare. By biasing that system in favor of new knowledge (creative production in copyright, innovative production in patent, distinctive production in trademark), that standard model either excludes from consideration policy problems that bear on durable but intangible cultural objects, or it treats those problems as narrow and exceptional, or both. The normative fabric of intellectual property law is heavily invested in progress, in the many ways in which that concept might be defined.[44] It is not invested, much, in stasis. This Part offers a brief overview of the elements of IP regimes that bear on knowledge curation, and their inadequacies. My emphasis here is on doctrine as doctrine and its relative independence from social, economic, or other institutional context.

A. Theoretical Perspectives

The standard IP model is based on an incentive to produce/access for reuse paradigm based on private rights, which is intended to address (or that has evolved in response to) a so-called "tragedy of the commons," overuse of an open resource pool of nonrival, nonexcludable "public goods," such as knowledge or information resources,

43 Intellectual property law is not the only model, of course; alternatives are well-known—public subsidies, public provision, patronage, and norm-based systems chief among them—but they are neither widely used nor, importantly, currently deemed to be of sizable theoretical import. I return to alternatives in Part IV below.

44 A current effort to recalibrate "progress" for the benefit of future generations is Brett M. Frischmann & Mark P. McKenna, *Intergenerational Progress*, 2011 Wis. L. Rev. 123.

that leads to its depletion.[45] Creativity and innovation law privatize knowledge production in order to (mostly) align internal incentives to produce and consume with external costs that consist of underproduction and overconsumption. Knowledge spillovers, which impact people and groups other than those who are party to bilateral transactions in IP rights, are presumptively characterized as harmful (and unlawful).[46] In that framework, *durable intangible* knowledge as such is likely not to be underproduced, because the law is likely to respond most strongly to protect investment in works that are most likely to last, other things being equal.[47] By definition, the production problem is resolved by the presence of IP rights. And even if intangible durability might be underproduced, *durable intangible* knowledge is not overconsumed, such that a better (and higher) price for durability is appropriate and uncompensated spillovers internalized by the producer. That result follows from either or both of two lines of reasoning. First, economically, the present value of future claims to preserved knowledge may be nominal or even zero, which means that using IP rules grounded on public goods thinking, to encourage present producers to internalize the costs of curation spillovers for the benefit of future generations, is unlikely to be effective.[48] Second, consumption itself tends to breed a work's influence and reputation—precisely the things that positively influence durability of the work. Alleged *over*consumption therefore constitutes a positive spillover for which the producer need not be compensated, rather than a negative spillover to be eliminated.[49]

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45 *See* Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, CONSTRUCTING COMMONS IN THE CULTURAL ENVIRONMENT, 95 CORNELL L. REV. 657, 666, 675 (2010).

46 *See* Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257, 267 (2007).

47 *See* Jane C. Ginsburg, *Putting Cars on the "Information Superhighway": Authors, Exploiters, and Copyright in Cyberspace*, 95 COLUM. L. REV. 1466, 1499 (1995) (emphasizing role of copyright law in encouraging the production of "sustained" works); William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 331–32 (1989) (arguing that IP rights are addressed to durable, as opposed to ephemeral, works).

48 *See* ELDRED V. ASHCROFT, 537 U.S. 186, 254–56 (2003) (Breyer, J., dissenting) (citing arguments by leading economists that the present value of an extension of the copyright term into the distant future is likely to have minimal impact on authors' decisions to create new works). *See generally* Deven R. Desai, *Property, Persona, and Preservation,* 81 TEMP. L. REV. 67 (2008) (reviewing limits on justifications for long-term creator control of their creations); Justin Hughes, *Fair Use Across Time*, 50 UCLA L. REV. 775 (2003) (noting the limited economic justifications for fair use as time passes after initial acts of creation).

49 *See* Frischmann & Lemley, *supra* note 46, at 257–58.

In the abstract, therefore, a public goods model of IP rights can be mapped onto legal rights that permit (if not encourage) knowledge curation. But in practice, the fit is awkward. The mapping that I lay out above treats spillovers of any type as intentionally rare or narrow or both. Courts and Congress agree. For example, literal, verbatim copying of copyrighted or patented cultural works ordinarily is treated as infringing because it undermines a typical market for IP rights, but some such copying might can be justified as a positive spillover because it is part of an account of the law's treatment of conservation of intangibles. Copying might be characterized as an act of personal expression (a personal act of creating influence based on taste, for example)[50] or as a legitimate act of consumption of creative work (assisting acts of memory of particular works),[51] but courts have been reluctant to extend the narrow exemptions for these practices that Congress has offered.[52] Instead, in practice, spillover questions related to knowledge curation have been pushed out of the intangible context altogether and are resolved primarily through a lens dominated by ownership and control of the relevant tangible object that embodies the work. Copying might be justified as part of and therefore used to enable a practice of collecting and archiving tangible artifacts. This move works theoretically, because the core intangible public goods model is largely undisturbed. Copyright law accommodates the curatorial interests of library and archive patrons at the price of extraordinarily detailed regulation that contrasts starkly with the broad, general rights afforded copyright owners.[53] The result remains narrow, and the knowledge curation benefit is achieved only indirectly, via tangible property curation.

If the public goods model does not fully explain the role of IP rights in knowledge curation, then one might move theoretically to a form of intellectual property pluralism, in which the several bodies of IP law are not linked so profoundly to a single underlying construct.

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50 *See generally* Rebecca Tushnet, *Copy This Essay: How Fair Use Doctrine Harms Free Speech and How Copying Serves It*, 114 YALE L.J. 535 (2004) (arguing that copying serves, among other things, to promote self-expression).

51 *See* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 442 (1984).

52 *See* 17 U.S.C. § 1008 (2006) (offering a limited exception to infringement liability for making certain noncommercial musical recordings). That section was given a limited reading by the Ninth Circuit in A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1024 (9th Cir. 2001).

53 *See* 17 U.S.C. § 108 (2006); *infra* note 134 and accompanying text. Copyright privileges for libraries and archives are discussed at length in Menell, *supra* note 7, at 1034–38. Some argue that copyright law has not been sizable barrier, in practice, to the creation of digital archives. *See* Peter B. Hirtle, *Undue Diligence?*, 34 COLUM. J.L. & ARTS 55 (2010).

Public goods welfarism is not the only value at stake in IP systems; IP law is concerned primarily with new knowledge, but it also touches on a number of related but distinct questions concerning the content of any given form of knowledge, including questions of identity, authenticity, cultural value, access, community, and authorial reputation,[54] grounded not in economic reasoning but in ethics[55] and justice.[56] In contemporary law, these concepts are typically associated with systems of trademark law, with moral rights, with private licensing systems such as Creative Commons and open source licenses and databases,[57] with efforts to protect traditional knowledge,[58] and with norm-based regimes grounded more in community or public morality than in economic incentives.[59] In bits and pieces, these frameworks can do some of the work of knowledge curation; in Part IV, below, I explore how they might be assembled into a broader whole. But none of them can do all of the work necessary to explain how IP rights connect to knowledge curation. Identity, authenticity, and reputation interests represented in the several doctrines of moral rights are tied primarily to personality, identity, and dignity interests of the human author,[60] rather than interests in preserving knowledge as such. Collective licensing schemes, norm-based systems, and the like are founded on questions of communal identity and distributive justice. Knowledge curation may be a happy by-product of these things, but it is a by-product nonetheless. Efforts to protect access, identity, and authenticity interests for the benefit of successive generations turn out to be

54 *See* 17 U.S.C. § 106A (2006); *infra* notes 138–39 and accompanying text. *See generally* Cyrill P. Rigamonti, *Deconstructing Moral Rights*, 47 HARV. INT'L L.J. 353 (2006) (discussing moral rights in copyright law).

55 *See generally* 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) (describing the appropriate boundaries of Lockean analysis of intellectual property rights).

56 *See generally* Madhavi Sunder, *IP*^{3}, 59 STAN. L. REV. 257 (2006) (applying the capabilities approach of Amartya Sen to information law questions).

57 *See infra* notes 136–37 and accompanying text.

58 *See, e.g.*, Madhavi Sunder, *The Invention of Traditional Knowledge*, 70 LAW & CONTEMP. PROBS. 97 (2007). Those efforts increasingly blend *sui generis* strategies with efforts to leverage enabling and disabling provisions of collective licensing (such that access to the contents of a traditional knowledge database may be conditioned on compliance with knowledge-conserving terms) and patent law (such that the contents of the database may be deemed to be relevant prior art against inventions grounded in knowledge that the database contains). Relevant examples include the Traditional Chinese Medicine Patents Database, the Traditional Knowledge Digital Library, and the Traditional Ecological Knowledge Prior Art Database.

59 *See infra* note 147 and accompanying text.

60 *See generally* Rigamonti, *supra* note 54.

at least equally focused on efforts to protect the post-production interests of prior-generation creators, whether those creators are individuated, as in the case of Western copyright authors or patent inventors, or communal, as in the case of traditional knowledge regimes.

Turning briefly away from IP theories, one might search for legal rationales for knowledge curation in other legal regimes. Durability of objects is the question posed by tangible property law and specialized subsets of property law, such as art law.[61] The challenge here is the relatively value-independent position that the law takes relative to the knowledge content of the objects. Generalized tangible property regimes typically assign to intellectual property law the value of the intangible expression or innovation expressed in a particular object or collection of objects. Property law is concerned primarily with the abstract idea of possession and/or control of the thing, or with questions of obligation and trust rather than value.[62] Art law and cultural property (or cultural heritage) law specifically addresses the issue of preservation of knowledge as such, but only so long as knowledge is embodied in particular sites and objects.[63] More important, unlike intellectual property law, tangible property law typically offers little in the way of default rules of access that ensure that the intangible knowledge represented in art and artifacts can be studied, used, and re-used by later generations except within the context of particular community settings, or particular bilateral (i.e., assent or need-based) relationships.[64]

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61 In addition to SAX, *supra* note 13, see Michael J. Madison, *Creativity and Craft*, *in* CREATIVITY, LAW, AND ENTREPRENEURSHIP (Shubha Ghosh & Robin Paul Malloy eds., forthcoming 2011) (describing the attitude of copyright law relative to artisanal creativity).

62 This point was brought home to copyright lawyers in the context of *Cmty. for Creative Non-Violence v. Reid*, 490 U.S. 730 (1989). A sculptor settled a case with an organization that hired him to create a sculpture; the agreement confirmed copyright ownership in the sculptor and ownership of the sculpture itself in the organization. The parties returned to court after the organization denied the sculptor access to his sculpture for purposes of making reproductions. The court fashioned an equitable remedy that allowed the sculptor what the court characterized as akin to ''an implied easement of necessity'' to enable him to exercise his rights under the settlement. *See* Cmty. for Creative Non-Violence v. Reid, 1991 WL 415523, at *1 (D.D.C. Jan. 7, 1991).

63 *See, e.g.*, Patty Gerstenblith, *From Bamiyan to Baghdad: Warfare and the Preservation of Cultural Heritage at the Beginning of the 21st Century*, 37 GEO. J. INT'L L. 245 (2006) (describing international framework for protection of cultural heritage objects and sites).

64 *See generally* Cortelyou C. Kenney, *Reframing Indigenous Cultural Artifacts Disputes: An Intellectual Property-Based Approach*, 28 CARDOZO ARTS & ENT. L.J. 501, 527–34 (2011) (describing limits of cultural property law as applied to questions of knowledge and representation in tangible artifacts); Lauren McBrayer & John J. Steele, *The*

Because the knowledge forms at stake are intangible, by my definition, and because IP forms are the default forms of legal regulation of knowledge intangibles, in the next section I review the efforts and inadequacies of the three major bodies of IP doctrine with respect to knowledge curation.

B. Copyright and Curation

Copyright doctrine offers a number of rules that relate to curating intangible creativity. The law distinguishes between idea and protected expression, leaving the former available and formally available for reuse.[65] Under the doctrines of merger and scenes à faire, the law limits protection for and assures use of material that becomes a kind of cultural standard.[66] Duration rules are important. Formally, at least, copyright expires and every copyrighted work eventually enters the public domain,[67] meaning that anyone is legally entitled to exploit it commercially—in its original form, as well as in modified form. A decade ago, a debate was fought over extensions to the term of copyright principally on the ground that term extension was needed to encourage proprietors of older works to preserve and redistribute them; opposers denied that this incentive mechanism would operate as described, or at all, and that preservation interests would be better served by limiting copyright's term rather than extending it.[68] The distinction between copyrighted works of authorship and their fixed forms,[69] and the first sale doctrine as a defense to infringement of distribution rights, ensure that tangible objects that embody copyrighted works live a marketable life.[70] Copyright law offers special protections to libraries and archives that engage in specified forms of

Art of Deaccession: An Ethical Perspective (ALI-ABA Course of Study, Mar. 30 to Apr. 1, 2005), *available at* SK061 ALI-ABA 339 (describing ethical framework that surrounds museums' decisions to remove objects from their collections).

65 *See* 17 U.S.C. § 102(b) (2006).

66 *See* Coquico, Inc. v. Rodríguez-Miranda, 562 F.3d 62, 68 (1st Cir. 2009).

67 *See* 17 U.S.C. §§ 302–304.

68 The Supreme Court eventually upheld the Sonny Bono Copyright Term Extension Act against constitutional challenge, despite expressing some skepticism that Congress had made a wise policy judgment. *See* Eldred v. Ashcroft, 537 U.S. 186, 222 (2003). Subsequent research by Paul Heald suggests that concerns that public domain works would be underexploited may be misplaced. *See* Paul J. Heald, *Does the Song Remain the Same? An Empirical Study of Bestselling Musical Compositions (1913–1932) and Their Use in Cinema (1968–2007)*, 60 CASE W. RES. L. REV. 1, 2 (2009). In my terms, his point is that permitting works to enter the public domain is a plausible knowledge curation strategy.

69 *See* 17 U.S.C. § 202 (2006).

70 *See id.* § 109.

reproduction for archival and preservation purposes.[71] Creating and publishing indexes to copyrighted works and offering search technologies and finding tools are acts that are often protected in copyright, though not universally, as fair use or under safe harbors from potential contributory or vicarious liability.[72] Certain applications of the adaptation right, and certain forms of moral right—primarily the right to maintain the integrity of the work—offer protection to cultural heritage interests rather than or in addition to protection for authors' interests.[73] Historical and critical practices, privileged within the doctrine of fair use,[74] preserve the identities of their objects.

With two salient and important exceptions, for the most part, copyright law does little more regarding knowledge curation than put legal structures in place to permit curation, rather than encourage it. On the whole, copyright eschews judgments about cultural worth, whether new or old, via what is often referred to as an aesthetic nondiscrimination principle.[75] Copyright's treatment of the idea/expression distinction is representative. "Ideas" are not protected by copyright, so that readers, consumers, and later authors may use them, along with the rest of the public domain, for further creative production.[76] What counts as an "idea" in copyright terms, and therefore what is presumptively entitled to the weight of the law's interest in preservation for further use, is subject to the vagaries of judicial interpretation during litigation, provided that accused infringers undertake to challenge the distinction; neither creators nor other copyright institutions are obliged legally to define their "ideas" *ex ante*.[77] From a social standpoint, however, the expression embodied in a given work of authorship is often far more worthy of curation than the work's "idea." Today we value the expression of Shakespeare at least as much as we value his "ideas," and perhaps more so; many Shakespearean plots were derived from sources that were old even in

71 *See id.* § 108.

72 *See id.* § 512; Perfect 10, Inc. v. Amazon.com, Inc. 487 F.3d 701, 725 (9th Cir. 2007); Kelly v. Arriba Soft Corp., 336 F.3d 811, 822 (9th Cir. 2003).

73 *See* Massachusetts Museum of Contemporary Art Found., Inc. v. Büchel, 593 F.3d 38, 56–63 (1st Cir. 2010) (dealing with the right of integrity under the Visual Artists Rights Act); Gilliam v. Am. Broad. Cos., 538 F.2d 14, 25–26 (2d Cir. 1976) (directing entry of preliminary injunction against broadcast of modified versions of plaintiffs' works).

74 *See* 17 U.S.C. § 107 (2006).

75 *See* Bleistein v. Donaldson Lithographing Co., 188 U.S. 239, 244 (1903).

76 *See* Jessica Litman, *The Public Domain*, 39 EMORY L.J. 965, 968, 992–93 (1990).

77 *Id.* at 973–74.

the time of Elizabeth I and James I.[78] Copyright thus entrusts curation of creative knowledge to the copyright owner during the term of copyright, as part and parcel of the owner's market-based exclusive rights, and to the public afterward, in a binary that makes a certain degree of sense only from the standpoint of the production of new things. With respect to old things, the market is assigned an even greater role. As a matter of copyright law, knowledge curation in the public domain remains market-based. Some works attract private investment despite the absence of exclusive rights; some works attract public investment by the state if they are deemed worthy of state support;[79] and some works attract idiosyncratic interest by individuals, communities, and organizations as collectors or archivists. None of that activity, however, is modeled by the copyright system.

The first salient exception is the idea that copyright subsists only in works "fixed in a tangible medium of expression,"[80] a phrase that was added to the American Copyright Act during the revision enacted in 1976. Fixation is important culturally for all kinds of reasons having to do with the operation of the contemporary copyright system; it is important historically because tangible manuscripts were the original "copies" that were the subjects of printing privileges supervised by the Stationers' Company in 16th and 17th century England.[81] Tangibility, or fixation, allows the copyright owner, courts, and the Copyright Office to determine that a work of authorship was created and what that work was. It supports social interests in the distribution of copies of copyrighted works. From the standpoint of knowledge curation, fixation creates tangible things that curatorial interests work with, in public and private libraries, archives, maps, and collections of knowledge—provided that later generations have access to these

78 *See generally* ROBERT S. MIOLA, SHAKESPEARE AND CLASSICAL COMEDY: THE INFLUENCE OF PLAUTUS AND TERENCE (1994); ROBERT S. MIOLA, SHAKESPEARE AND CLASSICAL TRAGEDY: THE UNFLUENCE OF SENECA (1992).

79 For example, the National Film Registry of the Library of Congress selects culturally significant American films to be preserved for future generations. *See* National Film Preservation Act of 1988, Pub. L. No. 100-446, 102 Stat. 1774, 1782; *National Film Preservation Board*, LIBRARY OF CONGRESS, http://www.loc.gov/film (last visited Sept. 21, 2011).

80 *See* 17 U.S.C. § 102(a) (2006). Under the definition provided in § 101, "[a] work is 'fixed' in a tangible medium of expression when its embodiment in a copy or phonorecord, by or under the authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration." *Id.* § 101.

81 *See* ADRIAN JOHNS, PIRACY: THE INTELLECTUAL PROPERTY WARS FROM GUTENBERG TO GATES 25–27 (2009).

things.[82] But access to tangible things is the missing link of copyright doctrine as knowledge curation. Because fixed forms of copyrighted works are forms of tangible or chattel property to which copyright, by design, does not apply, and because copyright mandates access to works of authorship only grudgingly—and then only to works within its scope[83]—one cannot trace this piece of copyright doctrine fully through to a policy of knowledge curation. The fixation requirement reminds us that copyright is not entirely divorced from idea that curation of past creativity is among the many goals of the law. Parties who would conserve relevant knowledge need access rights based on some other source.

The second salient exception is, indirectly, a form of access and therefore directly a part of copyright as knowledge curation: the requirement that owners of copyrights in published works deposit two copies of the work with the Library of Congress.[84] The deposit requirement was added to the American copyright statute in 1846[85] but had ample precedent in English and European experience—though publishers and printers resisted, at times mightily, the idea that they should be compelled to subsidize what they perceived as their competitors via mandatory provision of free books.[86] Fixation is a historical contingency turned copyright policy; deposit, like copyright itself, comes to us as a negotiated equilibrium resolving claims of authors, readers, publishers, and governments. Its value as a legal

82 Works of authorship created and/or preserved in digital form pose special curatorial problems, both within copyright and outside of it. Within copyright, digital works of authorship may not be permanently affixed to specific tangible media in the way that ink is affixed to paper. Outside of copyright, access to digital knowledge—as well as access to some forms of analog knowledge—typically requires access not only to media that embodies the work but also access to technical architecture that supports "reading" or "playing" the work. I cannot play a CD on an iPod. I also cannot play a Long-Playing record (LP) on a CD player or a videocassette on a BluRay player. The challenges of digital curation and data curation have attracted numerous efforts to study and solve them. *See, e.g.*, INT'L J. DIGITAL CURATION, http://www.ijdc.net/index.php/ijdc/index (last visited Sept. 21, 2011); *Digital Preservation*, LIBRARY OF CONGRESS, http://www.digitalpreservation.gov/ (last visited Sept. 21, 2011). For a particularly vivid example of an access problem concerning a ancient form of knowledge, see TOBY LESTER, THE FOURTH PART OF THE WORLD: THE RACE TO THE ENDS OF THE EARTH, AND THE EPIC STORY OF THE MAP THAT GAVE AMERICA ITS NAME (2009), describing the search for and recovery of the sixteenth-century Waldseemüller map.

83 I refer here to compulsory licensing, some forms of which count as species of knowledge curation. *See, e.g.*, 17 U.S.C. § 115 (2006) (compulsory license for cover recordings).

84 *See id.* § 407.

85 *See* Menell, *supra* note 7, at 1022–28.

86 *See* JOHNS, *supra* note 81, at 215–20, 234–40.

source of knowledge curation seems obvious today, but in fact deposit's role in curation, while critical, is tenuous. Deposit creates the conditions for curation, but does not curate anything in itself. Curation depends on a related but independent matrix of institutions that house the deposits and make them available to members, patrons, and at times, the public.[87] I return to the role of those institutions in Part V.

C. Patents and Curation

Knowledge curation questions are not limited to works of art or high culture, and in any case intersections and overlaps between the subject matter of copyright and the subject matter of patent mean that it is unhelpful to limit the conversation to the former. Patent law offers a set of doctrinal and policy tools that focus on novelty and innovation in rough proportion to copyright's focus on creativity. But the binary pattern described above with respect to copyright largely repeats in patent law. Patentable inventions must be nonobvious and novel.[88] Patent is subject to a principle of technological neutrality[89] that corresponds roughly to copyright's aesthetic nondiscrimination principle. Curatorial interests, as in copyright, are mostly negative. Subject matter rules exclude laws of nature, abstract ideas, and mathematical formulae from patent protection—independent of their eligibility for consideration as nonobvious and novel inventions—in part to protect later generations in their ability to use such presumably unchanging things.[90] As with copyright law, patent term rules free inventions from exclusive control and deliver them to the public marketplace. Curation of public domain inventions is, in practice, handled on the same terms and in ways comparable to curation of works that occupy copyright's public domain.

Like copyright law, patent law has some important exceptional rules that bear on curation. In patent law, the chief bearer of an affirmative knowledge curation policy is a meta-concept: the idea of the art. In American law, patent is concerned with the "useful Arts,"[91] and the idea of the art, or technical discipline, occupies a central role

87 The idea of the free public library in the United States can be traced to the founding of the Library Company of Philadelphia, in 1731, by Benjamin Franklin and others. *See* EDMUND S. MORGAN, BENJAMIN FRANKLIN 56–57 (2002).

88 *See* 35 U.S.C. §§ 102–103.

89 *See* TRIPS Agreement, *supra* note 4, art. 27(1).

90 These are "part of the storehouse of knowledge of all men. . . . free to all men and reserved exclusively to none." Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948).

91 *See* U.S. CONST. art. I, § 8, cl. 8.

in a number of patent rules, most importantly the scope of the relevant prior "art" for nonobviousness and determinations.[92] In addition, the domain of the artisan to whom the invention must be adequately disclosed is part of the enablement inquiry.[93] The idea of the useful arts might play a central role in the concept of patentable subject matter, although the Supreme Court has (for the time being) not followed that path.[94] The "art" is the legal and social custodian of the accumulated knowledge of the relevant field and the bearer of its history in legal proceedings before the Patent Office and in a courtroom.

In one additional respect, knowledge curation in the context of patent law overlaps with knowledge curation in the context of copyright law. Patentees are subject to a disclosure obligation.[95] The invention must be fully "enabled" in the specification that forms part of the final patent document so that the public has the benefit of the knowledge that constitutes the innovation, in exchange for the limited rights granted by the patent itself.[96] Within the conventions of patenting, patent specifications turn patentable machines, processes, and compounds into copyrightable, and durable, text. Patent prior art, compiled in public, searchable archives, is itself an institutional mechanism for preserving technological heritage, sustained to a large part by a specific part of the bargain that is at the heart of modern patent law.[97] All of this, of course, feeds existing copyright-style argu-

92 *See* 35 U.S.C. § 103(a) (2006) ("A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."). The America Invents Act of 2011 amends this section, changing the relevant time from "the time the invention was made" to "the effective filing date of the claimed invention." Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 3(e), 125 Stat. 284–341 (2011).

93 *See In re* Wands, 858 F.2d 731, 735 (Fed. Cir. 1988).

94 The Supreme Court's recent decision in *Bilski v. Kappos*, 130 S. Ct. 3218 (2010), avoided relying on the idea of useful "arts" as an outer boundary on patent-eligible subject matter. Justice Stevens and three other concurring Justices felt otherwise, although their discussion of the meaning of the "arts" as a substantive guide to modern law left much to be desired. *See Bilski*, 130 S. Ct. at 3242–45 (Stevens, J., concurring).

95 *See In re Wands*, 858 F.2d at 735.

96 *See* 35 U.S.C. § 112 (2006).

97 *See generally* Dan L. Burk, *The Role of Patent Law in Knowledge Codification*, 23 BERKELEY TECH. L.J. 1009 (2008) (discussing the role of patent law in the codification of knowledge). Some prominent critics have characterized this as a vice of patenting, rather than a virtue. The scientist and philosopher Michael Polanyi regarded science

ments about access to representations of knowledge in libraries, archives, museums, collections, and databases.

D. Trademarks and Curation

Copyright and patent law do not exhaust relevant IP disciplines relevant to curatorial questions. Trademark law plays an important role as well, although trademark law bears an imperfect relationship (and perhaps a nonexistent relationship) to public goods models of innovation and IP law. Trademark law is regarded as having little to do with innovation or creativity of any kind; instead, it is a limited form of consumer protection and unfair competition law.[98] But trademark protection increasingly offers innovators a useful appropriation mechanism to respond to public goods concerns,[99] notwithstanding occasional efforts to limit recourse to multiple systems of intellectual property protection for single innovations.[100] Whatever its justification, however, trademark law includes doctrines that offer opportunities for the creation and curation of stable cultural meaning.[101]

The fact that trademark protection does not expire so long as the mark owner continues to use the mark[102] means that trademark offers mark owners powerful incentives to curate their marks and the knowledge that they represent, should they choose to do so. Trademark protection increases in strength in rough proportion to successful efforts by mark owners to cultivate goodwill among the consuming public, including efforts to police infringing use of the mark by rivals

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itself as a tradition embedded in practices and norms of its practitioners ("tacit knowledge") and therefore antithetical to the rationalizing and ordering imperatives of patenting. *See* JOHNS, *supra* note 81, at 416–21. Polanyi argued that patenting should be replaced by comprehensive state subsidies specifically targeted to the demonstrated social value of innovation. *See id.*

98 *See* Mark P. McKenna, *The Normative Foundations of Trademark Law*, 82 NOTRE DAME L. REV. 1839, 1840 (2007).

99 *See* Deven R. Desai, *A Brand Theory of Trademark Law* (unpublished manuscript on file with author).

100 *See* Dastar Corp. v. Twentieth Century Fox Film Corp., 539 U.S. 23, 37 (2003) (limiting overlap between copyright and trademark rights); TrafFix Devices, Inc. v. Mktg. Displays, Inc., 532 U.S. 23, 35 (2001) (limiting overlap between patent and trademark rights).

101 *See generally* Beebe, *supra* note 33 (describing the "sumptuary" nature of trademark doctrines that promote social stability).

102 *See, e.g.*, Planetary Motion, Inc. v. Techplosion, Inc., 261 F.3d 1188, 1195 n.9 (11th Cir. 2001); Lucent Info. Mgmt., Inc. v. Lucent Techs., Inc., 186 F.3d 311, 317 (3d Cir. 1999).

and efforts to monitor uses of their marks by licensees.[103] Because commercial signs and symbols evolve just as more typically knowledge-based works do, trademark law offers doctrines that reward owners of such marks who invest in strategies to protect the continuity of a mark's commercial impression. As I noted at the outset of this article, the priority of a valid mark will be sustained continuously through those changes so long as the mark continues to make a substantially identical commercial impression.[104] Questions of identity and authenticity of source and product, in the minds of consumers, are central to that determination. Pepsi may change its house mark, as Pepsi has done from time to time, yet Pepsi may keep the same priority of use associated with its *original* mark so long as consumers take from the *revised* mark the understanding that the soda in the cans and bottles bearing the new mark is substantially the "same" Pepsi, whose quality is assured by the same entity, as soda in cans and bottles bearing the old mark.

The best thing that might be said of the doctrine of dilution in trademark law is that it operates occasionally to protect investment in branding and consumer expectations concerning signs and symbols in the infrequent circumstance where protection is appropriate and where confusion-based trademark law fails to do so—that is, dilution may operate as a kind of curation backstop.[105] Exclusions from trademark protection provide for the conservation and possible re-use by consumers and competitors of symbols that amount to common or collective cultural heritage: functional articles,[106] generic terms,[107] marks that have been abandoned or otherwise severed from appropriate goodwill,[108] and marks that are subject to legitimate claims of fair or nominative use.[109] To the extent that trademarks are subject to valid claims of free expression by critics, parodists, or rivals of mark

103 *See* Dawn Donut Co. v. Hart's Food Stores, Inc., 267 F.2d 358, 366–67 (2d Cir. 1959).

104 *See supra* note 11 and accompanying text.

105 *See generally* Barton Beebe, *A Defense of the New Federal Trademark Antidilution Law,* 16 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1143 (2006) (describing dilution doctrine).

106 *See* 15 U.S.C. § 1052(e)(5) (2006); Qualitex Co. v. Jacobson Prods. Co., 514 U.S. 159, 164–65 (1995).

107 *See, e.g.*, Murphy Door Bed Co. v. Interior Sleep Sys., Inc., 874 F.2d 95 (2d Cir. 1989).

108 *See* 15 U.S.C. § 1127 (2006) (defining abandonment of a mark); FreecycleSunnyvale v. Freecycle Network, 626 F.3d 509, 512 (9th Cir. 2010).

109 *See, e.g.*, Playboy Enters., Inc. v. Welles, 279 F.3d 796 (9th Cir. 2002); New Kids on the Block v. News Am. Publ'g, Inc., 971 F.2d 302 (9th Cir. 1992).

owners, preservation of the identity and meaning of the mark is essential to the success of the speaker.[110]

Indirectly and taken together, these doctrines enforce a limited form of knowledge curation within the domain of commercial marketing and branding. Trademark law covers some of the gaps left by copyright and patent law as knowledge curation, particularly to the extent that trademark law actively encourages mark owners to actively invest in curating their own marks in order to preserve a mark's validity or priority, and to the extent that in so doing, the law embraces questions of authenticity and identity. But trademark law has a limited scope, at least formally, with respect to the types of knowledge that marks represent: goodwill associated with commercial goods and services. And trademark's curatorial function is left almost entirely to the preferences of mark owners. Appropriation of their marks by consumers and competitors via the doctrine of "genericide" is actively resisted; use of allegedly abandoned marks by competitors is contested.

In sum, IP rights offer a useful introduction to the idea of the relationship between law and knowledge curation, but there is clearly much more to the story. Fleshing out that story begins in the next Part, with a brief comment on the role of pirates.

III. INTERLUDE: PIRATE CURATORS

Piracy is an unconventional part of the concept of knowledge curation and an unexpected if by now conventional part of IP law and history. Its relevance, however, is this. Knowledge curation may be grounded not in assertions of IP rights, nor in protection of the public domain, but instead in the very concept of infringement. There are at least two species of what we might call "pirate curators" to be accounted for in a reconstituted description of knowledge curation.

First are pirate producers, institutions and practices that knowingly engage in acts of infringement by reproduction or distribution, or at least, piracy (if not technical infringement) in order to extend the life of cultural artifacts. The historian Adrian Johns describes the lively market for reprinters in early America, importers and republishers of British material under copyright.[111] The now standard account of American copyright history relies on distribution of pirated copies of British literature during the 19th century, which was lawful under American law at the time but the subject of a great deal of anger and

110 *See* Louis Vuitton Malletier S.A. v. Haute Diggity Dog, LLC, 507 F.3d 252, 264–65 (4th Cir. 2007).

111 *See* JOHNS, *supra* note 81, at 188–93.

recrimination by British authors.[112] Piratical reproductions of visual art, particularly film, damage the bottom line of copyright owners but extend the cultural lives of their products.[113] Counterfeit shoes, watches, and handbags simultaneously harm strong brands and reinforce their salience in the minds of consumers and in society generally.

Second are pirate consumers. Johns notes the evolution of broadcast licensing in England during the twentieth century in response to "unauthorized reception" of radio signals.[114] He rightly connects that phenomenon and its cultural impact to the late twentieth century hacker culture and its impact on software development and content distributed on the Internet.[115] Pirates beget pirates beget curation of content in the home and lab. "Liberating" digital music and movies from rights-protection schemes can be treated, under some circumstances, as acts of unauthorized cultural conservation, particularly where critical, historical, and private or personal uses are involved. In between these extremes lie practices such as "librarying" recordings of broadcast television, recording television shows and storing the recordings in an informal personal "library" or archive. Such informal, broadly distributed consumer collection of knowledge forms seems unquestionably to contribute to the preservation of certain cultural artifacts as forms of knowledge, yet it can be fairly described under current law as infringing. The Supreme Court described it as just that.[116] "Librarying" has antecedents in more casual but nonetheless historically significant acts of piracy. The only known extant recording of the final game of the 1960 World Series, won by the Pittsburgh Pirates on a Game Seven, ninth-inning home run by Bill Mazeroski, was discovered recently in a wine cellar once owned by Bing Crosby. Apparently Crosby paid a company to film the game by kinescope, while he traveled to Paris (unable to bear the stress of watching the game via live broadcast) and listened to it on the radio.[117] Some might hesitate to call Crosby a curator and a

112 *See* AUBERT J. CLARK, THE MOVEMENT FOR INTERNATIONAL COPYRIGHT IN NINETEENTH CENTURY AMERICA 58–63 (1960).

113 *See generally* EDUARDO MOISÉS PEÑALVER & SONIA K. KATYAL, PROPERTY OUTLAWS: HOW SQUATTERS, PIRATES, AND PROTESTERS IMPROVE THE LAW OF OWNERSHIP (2010) (describing virtues of piracy).

114 *See* JOHNS, *supra* note 81, at 358–65, 381–99.

115 *See id.* at 463–96.

116 *See* Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 451–52 (1984).

117 *See* Richard Sandomir, *In Bing Crosby's Wine Cellar, Vintage Baseball*, N.Y. TIMES, Sept. 23, 2010, at A1. Did Crosby act illegally? Probably not. Live broadcasts of athletic events were not copyrightable works of authorship. The exclusion of broadcast signals from American copyright law and broadcasters' efforts to use other law to

famous baseball game a form of curated knowledge, but for my purposes, I think that he was, and it is.

IV. CURATION AS COMMONS

Pirate curation illustrates how knowledge curation at times straddles a complex line between curation policy that deals with knowledge in context and curation policy that deals with knowledge abstracted from context. IP doctrine falls mostly on the abstracted side of the line; its goal, in nearly all cases, is to make a market in IP rights and content. Yet pirates and piracy offer more-than-plausible claims to beneficial spillovers from knowledge curation.[118] The broad challenge of knowledge curation therefore lies not solely in creating markets by law where markets would not or do not otherwise exist.[119] The challenge of knowledge curation is in many respects the challenge of understanding a gift economy. Curation is backward-looking in part, because it concerns how to maintain the integrity of what has already been produced and distributed, but it is also gift-making for the benefit of future generations.[120] To describe those gifts, legally, culturally, and economically, I offer the concept of commons.

A. Commons Frameworks

One might assemble the doctrines, disciplines, and rules of IP law and tangible property law into a kludge of a system of knowledge curation. Curation happens, one might say, and leave it at that. That approach is manageable, up to a point, but unsatisfying. It offers limited interpretive power; it fails to capture purposeful individual, institutional, or social interests in curation; and it offers few opportunities for policy prescriptions to implement it. Knowledge does not curate itself. I offer a framework for understanding knowledge curation that is grounded in the idea of cultural commons, borrowing what is valuable from proprietary market orientations that animate both IP rights

control their cable television rivals and acts of so-called "signal piracy" are recounted in Timothy Wu, *Copyright's Communications Policy*, 103 MICH. L. REV. 278, 311–24 (2004). Among the many changes wrought by the revision of copyright law in 1976 was the addition of a definition of "fixation" that brought live broadcasts within the statute. *See* Nat'l Football League v. McBee & Bruno's, Inc., 792 F.2d 726, 731–32 (8th Cir. 1986).

118 *See supra* note 49 and accompanying text.

119 *See supra* note 48 and accompanying text.

120 *See* LEWIS HYDE, THE GIFT: IMAGINATION AND THE EROTIC LIFE OF PROPERTY (1983); Wendy J. Gordon, Response, *Discipline and Nourish: On Constructing Commons*, 95 CORNELL L. REV. 733, 734–35 (2010); Wendy J. Gordon, *Render Copyright Unto Caesar: On Taking Incentives Seriously*, 71 U. CHI. L. REV. 75, 85–87 (2004).

systems in general and most of its specific rules and doctrines but setting aside the presumption that these should dominate. IP systems need not be foundational to solutions to knowledge curatorial challenges. Long before the invention of intellectual property, curatorial memory practices were used to preserve knowledge that passed orally from generation to generation.[121]

Knowledge curation need not be only or primarily about securing the interest of the author or inventor. It need not be only or primarily about protecting the interest of "the public" or future generations. Instead, the goal is to understand the respective but intersecting and sometimes changing roles of creators, consumers, communities, reusers, enterprises, and social and cultural practices in building and sustaining individual and collective welfare—including individual and personal identity and virtue—centered on forms of knowledge.[122] Systems of intellectual property law have important roles to play in constructing that understanding, but they should be analyzed as elements in dynamic institutional systems. Those systems include legal and nonlegal dimensions and are grounded in public and private authority and in individual and collective agency.

What I mean by a commons framework is an institutional approach to knowledge curation that begins with the idea of managed openness, and structured sharing. Openness may exist at multiple levels simultaneously: with respect to knowledge forms and practices themselves (which may be characterized as variably open to use, adaptation, and extension), with respect to the location of participants in governance (who may be inside or outside a commons institution or community), and with respect to commons institutions or communities themselves (which may be more or less porous regarding membership or participation). Commons embraces influences on outcomes that are grounded not only in legal rights and obligations but also in social and institutional practices as well as individual interests, in patterned and unpatterned activity at the individual level (that is, intentional activity, rationally motivated and otherwise, and chance activity), and in intersections between material and intangible

121 *See* FRANCES A. YATES, THE ART OF MEMORY (1966).

122 Generally, knowledge objects may serve as focal points and as boundary objects for social groups, and group behavior may be the real source of the social value that intellectual property regimes are intended to promote. *See* YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM 212 (2007); Dan Hunter & F. Gregory Lastowka, *Amateur-to-Amateur*, 46 WM. & MARY L. REV. 951, 978–89 (2004); Michael J. Madison, *Social Software, Groups, and Governance*, 2006 MICH. ST. L. REV. 153, 175–76, 181–82.

form.[123] A commons framework sets questions of knowledge as cultural resources in an ecological or environmental context, organizing them in terms of overlapping, interdependent systems, rather than isolating those questions as market challenges. Such a framework offers a mechanism for investigating and modeling curation problems without doing violence to either IP conventions or to the public goods paradigm that usually drives them. It accommodates traditional IP thinking in the context of broader question of practices of conservation and curation as well as innovation, without displacing accepted notions of "progress." The commons framework is centered on forms of knowledge themselves and on institutions for processing interests in them, rather than on an assessment of the interests of particular upstream or downstream knowledge producers, consumers, firms, or communities.

Commons is neither a place nor a thing. It is not the public domain; it is not an intangible free-for-all. Commons is and are specific governance institutions for combining and sharing resources. In the case of knowledge curation, commons is a way of understanding how forms of knowledge are preserved and stewarded through time and across generations, taking into account relevant IP rules but also taking into account a range of other legal and nonlegal considerations in a way that allows scholars and policymakers to relate different knowledge curation challenges to one another. As governance, commons deconstructs and then reconstructs a relevant institution or environment, intending to identify its components and their patterns of interaction and chance. Commons research typically seeks to understand how resource pools function to enable the production of bigger, better, greater, or different things. A patent pool collects individual, related patents for licensing on a streamlined basis so that complex machines that depend on all of them can be produced despite potentially fatal licensing complexities.[124] In the knowledge curation context, commons governance also enables the conservation of old and existing things. A library, archive, museum, or collection—

123 Commons analysis as applied to cultural resources is grounded in the Institutional Analysis & Development (IAD) framework for natural resource commons developed by Elinor Ostrom and her colleagues. *See* ELINOR OSTROM, GOVERNING THE COMMONS 182–210 (1990); Madison, Frischmann & Strandburg, *supra* note 45. The IAD framework and its adaptation to cultural contexts are subject to a variety of criticisms. *See* Gregg P. Macey, Response, *Cooperative Institutions in Cultural Commons*, 95 CORNELL L. REV. 757, 766 (2010). For a partial reply, see Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, Reply, *The Complexity of Commons*, 95 CORNELL L. REV. 839 (2010).

124 *See* Madison, Frischmann & Strandburg, *supra* note 45, at 660–61.

a medieval institution, such as the Bodleian Library at Oxford (which is a copyright deposit library under British law), or a modern, digital, networked collection, such as the Internet Archive—offers a clear illustration of a commons institution that is at the center of knowledge curation, supported not only by intellectual property law but also by other legal systems, by history, and by norm, custom, and practice.

As a research strategy and descriptive tool, the cultural commons framework proposes to consider a number of distinct but related topics in any cultural production or curation setting.[125] The following should be considered: (i) the units of analysis (the "what" of the relevant resource(s), taking material, intangible, and legal dimensions into consideration), (ii) relevant participants (both individual and institutional), (iii) formal and informal rules of access, use, contribution, and extraction (including property rules, liability rules, disciplinary rules, and social norms and practices, all including but not limited to IP rules), and (iv) relevant degrees of openness, as described above. Issues in clusters (ii), (iii), and (iv) often surround the composition of formal communities and informal groups. Distinctions among private interest and public roles should be considered; invoking commons as a framework does not preclude evaluation or critique. Nor does it preclude regulation, investment, or other participation by appropriate government authority. Historical contingencies; technological, social, and economic change; background legal and cultural conditions (roughly analogous to Kuhnian paradigms of settled knowledge); and taste all should be accounted for.

Here, I offer the commons framework only partly as a research strategy. I offer it also at least partly metaphorically, as a way of seeing how the multiple legal and social influences on knowledge curation might be synthesized. The relevant commons environment in many cases of knowledge curation, focused on the intangible rather than the material, will be the individual work of authorship or invention or mark itself. The relevant items or units of analysis are not necessarily smaller components of a larger whole or of a common pool, though they may be. They are, in the first place, ideas, works of authorship, or inventions, or marks themselves. Commons for knowledge curation hinges on a key distinction. In the knowledge curation context, commons is a framework for understanding how a given resource, a knowledge work, is produced, distributed, consumed, donated, exchanged, collected, archived, loaned, and/or returned—unchanged. The basic rule of extraction and contribution is identity.

125 This paragraph condenses material described in Madison, Frischmann & Strandburg, *supra* note 45, at 683–707.

The knowledge object may be used, intact, and should be returned, intact. Modifications, adaptations, and improvements are often (but not always) permitted, but changes and changed versions occupy distinct conceptual spaces and often occupy distinct physical spaces. No matter how many times Shakespeare is reprinted, performed, or adapted, the original canon remains the original canon. No legal rule requires this, however.[126] The identity of Shakespeare—the body of work, not the man—is a product of history, tradition, and convention.[127] Adaptations are recognized by audiences and by society as a whole as separate enterprises. The law may and sometimes does intervene to mediate the relationship between new and old. Cover recordings of twentieth century popular music are permitted by compulsory license in American copyright law, but the compulsory character applies on condition that the new work preserve the "the basic melody or fundamental character" of the original musical composition.[128] More dramatic changes require a negotiated license between the copyright owner and the would-be adapter.

Commons as a curation strategy, blending questions of control, use, and long-term cultural stability, accepts as a premise the idea that knowledge may be given or shared, as well as sold.[129] In the context of the public goods model, a commons approach offers a kind of risk pool to creators, innovators, curators, and to future consumers. If the low present value of future curatorial benefits means that few current producers or knowledge curators will invest in curation for the future, then a pooling or commons approach offsets the risk that any one producer or distributor will suffer the entirety of curatorial cost. Structuring a legal regime to encourage structured pooling and sharing of creative works, rather than extending or broadening copyright

126 For example, in early 2011 a publisher decided to print an edition of Mark Twain's ADVENTURES OF HUCKLEBERRY FINN that substituted the word "slave" for the offensive "n-word." This may or may not be a good idea, but it is not illegal under American law. *See* Julie Bosman, *Publisher Tinkers With Twain*, N.Y. TIMES, Jan. 4, 2011, at A12.

127 *See* GREENBLATT, *supra* note 31, at 13.

128 *See* 17 U.S.C. § 115(a)(2) (2006). The law of "colorization" of old black-and-white films offers a related example. In the late 1980s, American copyright owners of older films "colorized" some of their catalog, as they were entitled to do under copyright law, in order to find new markets for the works. Heirs of directors of some of the films, notably John Huston, sought relief under French law, where they had standing to pursue claims of violation of their moral rights as authors. *See* Craig A. Wagner, Note, *Motion Picture Colorization, Authenticity, and the Elusive Moral Right*, 64 N.Y.U. L. REV. 628, 701 n.446 (1989). The controversy precipitated the creation of the National Film Preservation Board. *See supra* note 80.

129 *See* Gordon, Response, *supra* note 120.

owners' exclusive rights, may be more likely to pay off in terms of knowledge durability. Few works will be as durable as Shakespeare or Homer, but commons governance offers producers and knowledge curators the ability to pool and therefore minimize the costs of learning, over time, which ones may be. No one creator or institution bears all of the cost; all share the benefits—in a structured way, rather than a casual one. Shakespeare and Homer are with us today because of the successful evolution of a commons model. Many more works have disappeared because related commons models did not succeed. Looking ahead, understanding the mechanics of knowledge curation as commons should help policymakers think more critically about policy choices—including IP choices—that enable successful commons and disable weak commons.

Using commons as a framework for understanding "giving" as well as taking brings additional tools into the knowledge curation conversation. Knowledge curation as commons highlights the prospect that curation may not always be only about knowledge itself. Commons researchers sometimes emphasize the importance of nested commons institutions.[130] Modest commons may exist within a larger institutional commons framework. Curation of individual forms of knowledge may not happen without the active engagement of other commons institutions—communities of practice, disciplines, arts, and organizations, such as libraries and archives. Individual forms of knowledge may be constitutive of groups, serving as boundary objects and/or focal points for each of these things. The commons framework therefore makes room explicitly for institutions, practices, preferences, and histories that may be excluded from or marginalized in IP-based accounts of knowledge. If a work that is currently in the public domain—Shakespeare, to take my most salient example—does not preserve itself, then who is making judgments to determine that the work is worth preserving, that it is worth preserving in any of a wide variety of forms and formats, and that it should be made available to others (or not)? How, when, by whom, and why are those judgments being made? What is the role of state subsidies and provisioning of the knowledge goods in question? To what extent should these decisions be left to the so-called "market"? What is the role of emerging forms of "distributed production"?[131]

130 *See* Elinor Ostrom et al., *Going Beyond Panaceas*, 104 PROC. NAT'L ACAD. SCI. U.S. 15, 176 (2007).

131 *See* BENKLER, *supra* note 122.

B. Commons Illustrations

Commons are more common that we think, so to speak, even within core IP disciplines. The simplest illustrations of recasting knowledge curation as commons-based governance come from difficult IP problems and solutions. This Section touches on several of them, not proposing to resolve them but to show how they can be approached as governance rather than assimilated to market models, as they typically are.

In copyright, knowledge curation as commons appears in special provisions for collecting and archiving knowledge goods when those provisions are viewed jointly with institutional arrangements. Statutory provisions discussed earlier offer initial, if modest, examples. Collectors and compilers of pre-existing material are rewarded with their own copyrights, even if individual items collected or compiled are in the public domain because of expired or never-existing copyrights,[132] so long as collecting or compiling is undertaken with appropriate judgment.[133] Libraries and archives have safe harbors for collecting, reproducing, and making available individual and collected knowledge artifacts, in addition to baseline privileges to distribute and display copyrighted works afforded under the doctrine of first sale.[134] Copyright and related rights shade more aggressively into the idea of knowledge curation as commons via institutional arrangements that impose affirmative duties on individuals and communities who encounter forms of knowledge. Compulsory and statutory licenses are often conditioned on preserving the identity of the work used by the licensee.[135] Private communal licensing, such as open source licenses, and innovation-enabling licensing, such as Creative Commons, offer copyright-supported institutional schemes for preserving original works even as those works are intentionally shared by their creators with potential modifiers.[136] These are copyright commons, but commons that should take explicit account of historical, financial, organizational, and disciplinary considerations that bear on the constitution of libraries, archives, museums, collections, and databases.

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132 *See* 17 U.S.C. § 103(a) (2006) (compilation works covered by copyright); *id.* § 101 (compilation works include collective works).

133 *See* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 348 (1991).

134 *See* 17 U.S.C. § 109 (2006) (first sale and display); *id.* § 118 (reproduction by libraries and archives).

135 *See id.* § 115 (cover recordings); *id.* § 119 (secondary transmissions); *id.* § 122 (satellite retransmissions).

136 *See* Michael J. Madison, *Notes on a Geography of Knowledge*, 77 FORDHAM L. REV. 2039, 2078 (2009).

Moral rights, particularly anti-modification or mutilation rights, can be assimilated to copyright as parts of a knowledge curation approach. The famous case of *Gilliam v. American Broadcasting Co.*,[137] in which the members of Monty Python obtained a preliminary injunction in copyright preventing an American broadcaster from continuing to show episodes of *Monty Python's Flying Circus* that had been edited without Monty Python's consent, was among other things an effort to impose a curatorial standard on a knowledge work, that is, to preserve a kind of iconic Monty Python commons for the benefit of further audiences. Neither that case nor the legal claims that were invoked successfully should be understood, however, independent of the imperatives of the BBC, the original home of the Pythons, ABC, the defendant broadcaster with internal and external constraints given by federal broadcast regulation, and the history of Monty Python itself, a comedy troop that had already achieved significant commercial success in England and that was known to niche or elite audiences in the United States via public broadcasting. The entertainers were trying not merely to protect their own future commercial interests, but also to protect their pre-existing comedic goodwill.[138] The twenty-first century popularity of Monty Python largely attests to their success.

In patent, knowledge curation takes place not only through the constitution and application of relevant technical arts, as described above, but also through negotiations over proprietary claims to technical standards, such as pharmaceutical compounds whose patents expire, and through expansive patent protection given to so-called pioneer inventions. The intersection between proprietary pharmaceutical compounds and the rights of generic drug manufacturers to use those compounds after patents expire, in chemically unchanged form, is mediated by the federal Hatch-Waxman statute, in order to ensure that consumers have prompt access to generics after patents expire.[139] "Pioneer" inventions are accorded broader rights because of their role in establishing or transforming technical fields or industries.[140] In each of these examples the existence and scope of patent

137 538 F.2d 14 (2d Cir. 1976).

138 *See* ROBERT HEWISON, MONTY PYTHON 46–47 (1981).

139 *See* C. Scott Hemphill & Mark A. Lemley, *Earning Exclusivity: Generic Drug Incentives and the Hatch-Waxman Act*, 78 ANTITRUST L.J. (forthcoming 2011), *available at* http://ssrn.com/abstract=1736822.

140 A classic example of a pioneer invention, which represents a revolutionary technological advance, is the flying machine, or airplane. *See* Wright Co. v. Paulhan, 177 F. 261, 261 (C.C.S.D.N.Y. 1910). Perhaps not coincidentally, one of the first and most significant patent pools of the twentieth century involved patents on aircraft

rights is considered explicitly as part of industry-dependent structures and related institutions. A particularly vivid illustration of the idea of knowledge commons in patent law, and one that blends an image of a collection of knowledge itself with a portrait of how that knowledge is being preserved, come from judicial elaboration of the idea of prior art as a kind of museum of prior patents and technical papers hanging on the walls of the inventor, in *In re Winslow*.[141] In *Winslow*, as in all cases involving the law's nonobviousness standard, the question was whether the relevant prior art "taught" the invention produced by the inventor, a standard that regularly requires that courts, the Patent Office, and inventors and artisans refresh the concept of technical commons in order to distinguish inventions from it. More recent judicial interpretations of nonobviousness institutionalize that task in more explicitly curatorial terms, that is, requiring that outcomes be more judgment-based, grounded in the relevant art or discipline, and less mechanical.[142]

In trademark, application of the requirement that marks persist so long as they are used in commerce makes the commons idea more accessible from the beginning. Stable producer/consumer relationships that hinge on a fulcrum of goodwill symbolized by valid marks are, on this reading, curatorial commons in themselves. This proposition comes to life in collective marks and certification marks[143] and above all in geographical indications of origin.[144] All of these are forms of knowledge that embody not only goodwill as embodied in

technologies. *See* Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293, 1343–46 (1996). In modern patent doctrine, that broader protection comes in the form of broader language used in valid patent claims. Improvement patents are necessarily limited to narrower claim language. John Duffy notes that this approach emphasizes a formalistic approach to claim drafting and interpretation at the expense of an older approach that explicitly considered the social value of an invention and awarded broader rights to more significant ones. *See* John F. Duffy, *The Thirteenth Annual Honorable Helen Wilson Nies Memorial Lecture in Intellectual Property Law: Innovation and Recovery,* 14 MARQ. INTELL. PROP. L. REV. 237 259–63 (2010); *see generally* John R. Thomas, *The Question Concerning Patent Law and Pioneer Inventions*, 10 HIGH TECH. L.J. 35 (1995) (describing the philosophical and historical foundations of the doctrine).

141 365 F.2d 1017 (C.C.P.A. 1966).

142 *See* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 417–22 (2007) ("As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.").

143 *See* 15 U.S.C. § 1054 (2006) (permitting registration of collective and certification marks); *id.* § 1127 (defining collective and certification marks).

144 *See* TRIPS Agreement, *supra* note 4, at art. 22.

the relationship between a sign or mark, on the one hand, and a product or service, on the other hand, but partake of a specific and stable cultural meaning, or knowledge form, over and above whatever level of "quality" consumers may infer. A collective mark is used by a group rather than by an individual or firm; it denotes goods or services offered by the group, or membership in the group.[145] A certification mark denotes that the relevant goods or services conform to quality standards enforced by the certifying authority, though the goods or services are supplied by some other party. A geographical indication of origin (GI) consists of a designation that an agricultural product—wine, cheese, pork, potatoes—is produced in the region designated in the GI. In each case the point of the mark is not only to supply information to consumers or to differentiate goods and services from rival offerings. The point of the mark is to embody the continuing identity of the relevant group, body of standards, or regional culture and community.

Perhaps the most interesting illustrations of knowledge curation in commons frameworks come from beyond (or adjacent to) intellectual property. Peer review for academic research perpetuates disciplinary norms and traditions associated with particular fields.[146] Disciplines that have evolved to organize information and knowledge in order to ensure ease of access—from the Linnaean system of classifying living things to the Dewey Decimal System to the periodical table of the elements—establish commons both to preserve existing knowledge and to allow it to be extended on existing frameworks. Norm-based communities have both preserved and extended robust fields of knowledge with little support from formal intellectual property doctrines.[147] Neither those disciplines nor their application is unfailingly benign, of course. Describing knowledge curation in terms of commons invites precisely the kind of normative evaluation of the value of knowledge that copyright and patent law try to avoid. A contemporary example of a curatorial question where analysis might be improved on precisely this basis by shifting from an IP frame to a commons frame is Internet search, where considering regulatory responses to charges that Google and other search providers unfairly

145 *See* 15 U.S.C. § 1127 (defining collective and certification marks).

146 *See* CHRISTINE L. BORGMAN, SCHOLARSHIP IN THE DIGITAL AGE: INFORMATION, INFRASTRUCTURE, AND THE INTERNET 65–68 (2007) (identifying the functions of scholarly communication as legitimization, dissemination, and (taken together) access, preservation, and curation).

147 *See, e.g.*, Oliar & Sprigman, *supra* note 1, at 1809–31 (describing norm-based system for maintaining innovative domain of stand-up comedy).

manipulate search results is colored by claims that "the market" will sort out what search providers do and how they do it.[148]

V. Deeper Challenges for Knowledge Curation

No framework for knowledge curation is without its challenges. Some of those challenges are characteristic of all IP systems. Some are distinctive here, in the context of commons frameworks. I highlight them below but do not respond in detail (or in some cases, at all). They are hooks for continuing the conversation about the virtues and drawbacks of knowledge curation as a framing concept.

A. Nonrivalry

How it is possible that any intangible forms of knowledge do *not* survive intergenerationally? A work of authorship never degrades from overuse (despite some claims that it may, culturally speaking). An invention may be superseded or improved, but the knowledge represented in the invention does not degrade. What is it that society might be trying to "preserve," and why does it need to be preserved? At some level, intangible knowledge forms simply exist, once they have been created, and notwithstanding the fact that those forms evolve over time

The concern is valid, and it captures precisely the point of my interest: Why is it and how is it that some forms of knowledge are preserved, intact, across time and space so that they play an ongoing role in contemporary cultural life? Why is it and how is it that other forms "exist" in some abstract sense but disappear, either literally or, for all practical purposes, culturally? Some scholars have referred to influence and reputation as organizing concepts for drawing these distinctions.[149] My canvas of IP regimes could be directed, in part, toward understanding the institutions of influence, legal and otherwise.

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148 *Compare generally* Eric Goldman, *Deregulating Relevancy in Internet Trademark Law*, 54 Emory L.J. 507 (2005) (arguing against legal regulation of search results), *with* Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness and Accountability in the Law of Search*, 93 Cornell L. Rev. 1149 (2008) (suggesting federal regulation of search engines). The idea of curation in the search context is particularly complex because of the attenuated character of human judgment represented in search algorithms.

149 *See* Becker, *supra* note 29, at 351–71.

B. Levels of the Thing: Conserving Rights, Objects, and Intangible Knowledge

What is the interaction between interests in knowledge curation, on the one hand, and IP doctrines that distinguish among intangible legal rights, intangible works and inventions, and tangible objects and material processes, on the other hand? For curation purposes, why is it not sufficient to rely on a combination of a robust public domain and robust doctrines of fixation and embodiment? I criticize the weaknesses of proprietary, market-oriented IP regimes. Why are proprietary, market-oriented chattel property regimes (including cultural heritage law) insufficient as solutions? I have suggested that the relevant inadequacy is directed to the fact that the interests at stake are intangible, but that suggestion depends on distinctions among legal right (such as the copyright), legal thing (such as the original work of authorship), and tangible thing (such as the tangible medium of expression) that are defined by the law in the first place and that are not consistently represented throughout law or practice. Clarifying the purpose of commons as knowledge curation requires clarifying what, precisely, commons is dealing with. Which knowledge forms and practices are curated and which of those things evolve? Any particular item may be treated in both ways.

C. Types of Works: Sustained Works, Ephemeral Works, Hobbyist Works, User-Generated Works (Amateur Art) and "Personality" Works

The question of knowledge curation has been raised recently in the context of User-Generated Content, or what I call amateur art.[150] Given all of the supposedly great stuff now being produced and uploaded to YouTube and music sharing sites, what institutional mechanisms exist to ensure that some measure of this stuff is preserved? How can we know that the right or best stuff is preserved, if we can? Curation is value-based; the term and the discipline come freighted with implications for choice—preserve this but not that; offer assurances of trust regarding scope of the curator's enterprise, the integrity of the work, and access to it—that challenge the supposedly value-free, market-based frameworks that dominate the IP discussion. Are "sustained" works, which are more complex creative works that demand more capital investment and coordination to pro-

150 *See* Michael J. Madison, *Beyond Creativity: Copyright as Knowledge Law*, 12 VAND. J. ENT. & TECH. L. 817, 821 (2010).

duce,[151] more deserving of preservation and curation? What about works and inventions produced by "creative" professionals rather than by amateur artists?[152] What about ephemera, material that may come within copyright's ambit but only because of the trivial standards for protection that courts and Congress have given us? Some scholars suggest that works that are somehow more closely aligned with an author's personality or personhood are deserving of special protection; some European copyright traditions echo this perspective.[153] What about biases built into curatorial judgments based on race, class, income, gender, and other things?[154] A commons framework does not avoid those questions, as IP law now tries to, but neither does it require that they be answered ex ante. Judgment is part and parcel of processes and mechanisms of curation. The relationship between cultural value and legal sanction is more complex than IP now makes it out to be.[155] Value may follow curation, rather than the other way around. Arguably, this is the case with Shakespeare and Homer.

D. The Problem of Groups and Places: Collective Curation at Work and Home

An underappreciated feature of curatorial practices has been the extent to which they have been linked not only to specific institutions and disciplines, such as museums, archives, and libraries, but to specific places: buildings and campuses dedicated wholly or partly to that purpose, such as universities, churches and other places of worship, and monasteries. "Home-based knowledge curation," which became common in the Renaissance as wealthy individuals acquired private libraries of books,[156] gradually receded in importance as librarianship

151 *See* Ginsburg, *supra* note 47, at 1499 (coining the term "sustained works"); Neil Weinstock Netanel, *Copyright and a Democratic Civil Society*, 106 YALE L.J. 283, 288–89 (1996).

152 *See* Robert P. Merges, *The Concept of Property in the Digital Era*, 45 HOUS. L. REV. 1239, 1249–68 (2008).

153 *See generally* George H. Taylor & Michael J. Madison, *Metaphor, Objects, and Commodities*, 54 CLEV. ST. L. REV. 141, 145–51 (2006) (evaluating this perspective critically).

154 *See* Anupam Chander & Madhavi Sunder, *The Romance of the Public Domain*, 92 CALIF. L. REV. 1331, 1334 (2004) (criticizing the concept of the public domain as an abstraction free of institutional or cultural influence).

155 *See, e.g.*, Alfred C. Yen, *Copyright Opinions and Aesthetic Theory*, 71 S. CAL. L. REV. 247, 249–50 (1998) (describing inevitable influence of aesthetic values on copyright decisionmaking); Duffy, *supra* note 140, at 259–63 (describing heterogeneous nature of innovation that is in tension with standard model used by patent law).

156 For examples of nineteenth century literature describing the idiosyncratic curatorial practices associated with private libraries, see LUTHER FARNHAM, A GLANCE

developed as a professional discipline[157] and as states and philanthropists began to support public libraries,[158] only to reappear during the latter part of the twentieth century. Home-based taping, first for audio (in the 1950s and 1960s) and then for video (in the 1970s and 1980s), reintroduced in broad public form the notion that knowledge preservation need not be restricted to a specific place or to a specific class.

Collective curation is closely related to home-based curation. Wikipedia is the largest and best-known Internet-based collective knowledge sharing enterprise, and as such it is characterized by two related, distinctive features. First, anyone can participate in creating or editing Wikipedia content, and second, Wikipedia is located "on" the Internet and therefore in not any one place in particular. A closer look at Wikipedia reveals a more complex institution. "Wikipedians," those who curate Wikipedia's content, discipline themselves formally and informally via norms that have proved quite robust, if far from perfect.[159] And despite Wikipedia's placeless-ness, Wikipedia's knowledge does have locations; it is located both wherever Wikipedia's servers are located and simultaneously wherever a user has access to the World Wide Web. In a sense, and depending on the particular electronic storage arrangement that underlies Wikipedia or any related distributed, networked knowledge resource, knowledge is in "the cloud," the term of the moment that refers to electronic storage, quickly accessible, from somewhere in the network of networks.[160] Such collective knowledge curation is not an entirely novel phenomenon. Homer is with us today because of collective memory practices that made up the oral tradition.

AT PRIVATE LIBRARIES (1855), and ARTHUR L. HUMPHREYS, THE PRIVATE LIBRARY 87–94 (New York, J.W. Bouton 1897). *See generally* Private Libraries in Renaissance England: A Collection and Catalogue of Tudor and Early Stuart Book-Lists (R.J. Fehrenbach et al. eds.), an ongoing research project described at http://wmpeople.wm.edu/site/page/rjfehr/home (last visited Sept. 21, 2011).

157 The American Library Association was founded in 1876. *See History*, ALA, http://www.ala.org/ala/aboutala/missionhistory/history/index.cfm (last visited Sept. 21, 2011). The International Federation of Library Associations and Institutions was founded in 1927. *See 75 years of IFLA: 1927–2002*, IFLA, http://archive.ifla.org/III/75ifla/75index.htm (last visited Sept. 21, 2011).

158 The industrialist Andrew Carnegie supported the construction of thousands of public libraries worldwide. *See* ABIGAIL A. VAN SLYCK, FREE TO ALL (1995).

159 *See* JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET—AND HOW TO STOP IT 146–48 (2008).

160 *See* Christopher S. Yoo, *The Changing Patterns of Internet Usage*, 63 FED. COMM. L.J. 67, 83–86 (2010).

The challenge here is to imagine how IP rules and other rules might be configured to enable valuable collective curatorial practices in commons frameworks. Legal and policy frameworks for knowledge institutions, including digital intermediaries, are key. Might it be possible, for example, to conceive of the peer-to-peer Internet downloading/uploading phenomenon of the last decade not solely as an exercise in massive infringement of proprietary rights but as, in part, a distributed home- and person-based curatorial regime? Not by way of justifying illegal downloading in terms of copyright law, but by way of understanding some of the impulse that drives filesharing, and, more important, by way of assessing its full costs and benefits.[161]

E. Technical Platforms and Standards

Because of the explosion of technologies of creativity over the last 150 years—photography, recorded music, motion pictures, xerography, faxing, television and videotape, and computer technology—knowledge curation now embraces questions of infrastructure as well as questions of works of authorship and inventions and the like. Should knowledge curation questions be addressed separately to the machines by which we access and use knowledge, or treated as part of broader commons regimes, and in either case, why and how? These questions take several specific forms, each of which has become more acute in the digital age: format preservation, intersections between machines and software and digital content that trigger concerns about obsolescence, hacking, and reverse engineering,[162] and access to technical platforms.[163] One might plausibly argue that these "infrastructural" questions should be addressed as commons precisely because

161 Costs and benefits here extend far beyond interest in knowledge curation. *See* Jonathan Zittrain, *Ubiquitous Human Computing*, PHIL. TRANS. ROYAL SOC'Y A, 366, 3813–21 (2008) (evaluating "distributed human computing").

162 The anticircumvention provisions of the Digital Millennium Copyright Act (DMCA), for example, 17 U.S.C. §§ 1201, 1202 (2006), are in one sense an extension of proprietary rights assumptions that drive copyright law. In a different sense they represent an awkwardly implemented effort to enable copyright owners to manage digital knowledge commons, by requiring that users of digital content obey governance rules coded into proprietary technology. Knowledge may be used, as it were, only as our machines permit. *See generally* ZITTRAIN, *supra* note 159.

163 *See* Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575, 1580 (2002). The technical platform in question might be a general purpose computer operating system, a videogame environment, or a social standard. Or all three; divisions among these things are less clear than they once were. *See* MDY Industries, LLC v. Blizzard Entm't, Inc., 629 F.3d 928 (9th Cir. 2010) (determining that aftermarket supplier of robot software to be used in online game environment was liable for violating the DMCA, where the underlying com-

IP-based solutions to the public goods problem with respect to infrastructure leaves society undersupplied.[164] One way to look at curated knowledge is as a kind of cultural infrastructure.

CONCLUSION

The article is intended to begin a conversation about a topic that is not broadly explored in the legal literature. I have described the question of knowledge curation: whether, when, and how the intangible creative and innovative content that is the usual subject matter of copyright, patent, and trademark law is preserved and conserved over time, unchanged, and evaluated and shared. I argue that conventional IP accounts of creativity and innovation are inadequate to explain the phenomenon and that a broader and more useful account can be located in the concept of cultural commons.

I have asked perhaps more questions than I have answered. My description of the virtues of commons suggests some possible normative payoffs that I leave for later development.[165] I have hinted at but not elaborated the possible costs of a commons perspective.

While I am sanguine about the analytic possibilities that commons offers with respect to preserving old things and understanding how to preserve current things and things yet to come, I am not without reservations. Focusing attention on future generations' access to and use of old things expresses a kind of aesthetic preference that modern law typically shies away from, for reasons related to general societal discomfort with elite art and institutions that house it. There is an apparently antidemocratic, anti-egalitarian ethos implicit in the very question that is a bit unsettling. To resist the new is to resist progress of an obvious sort. It is, in part, to invite cultural and social stagnation.

The challenge of knowledge curation is to understand intersections between interests in cultural stability and dynamism without accepting uncritically the modern linkage between innovation and market exchange, that is, without indulging that different aesthetic

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plaint appeared to be that the defendant enabled game players to break the gaming rules governing the online community).

164 *See* Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 1020–22 (2005).

165 Other scholars have deployed the idea of "the cultural commons," defined as humanity's shared storehouse of art and knowledge, to make explicitly normative claims defending that commons against propertization and privatization. *See, e.g.*, LEWIS HYDE, COMMON AS AIR: REVOLUTION, ART, AND OWNERSHIP (2010).

preference.[166] Commons offers a framework for accommodating and understanding markets together with other institutions for organizing human behavior, legal and otherwise, with respect to our many different forms of knowledge.

166 *See* Julie E. Cohen, Lochner *in Cyberspace: The New Economic Orthodoxy of "Rights Management,"* 97 MICH. L. REV. 462, 464–65 (1998).